

Name : _____

Grade 8: _____

- Lithium has the shell arrangement 2,1, and sodium has 2,8,1. Why do the lessons place both in Group 1 even though their period numbers differ?
 - Both have one valence electron, but different numbers of occupied shells.
 - Both have only one occupied shell.
 - They have the same total number of electrons.
 - They have the same number of neutrons.
- Carbon has arrangement 2,4, and nitrogen has 2,5. Both are in Period 2. Why are they placed in different main-group columns?
 - Carbon's first shell has four electrons.
 - Only nitrogen has electrons outside its nucleus.
 - Their numbers of occupied shells are different.
 - They have different numbers of valence electrons.
- An element card gives the ground-state electron arrangement 2,8,6. A learner must place it in a modern periodic table numbered Groups 1–18. Which position should be used?
 - Period 2, Group 16
 - Period 3, Group 16
 - Period 6, Group 3
 - Period 3, Group 6
- Using Diagram 1, a learner places X in Period 2, Group 1 and Y in Period 3, Group 17. Which correction follows from comparing both models with those placements?
 - Exchange the period numbers, but keep both group numbers.
 - Exchange the group numbers, but keep both period numbers.
 - Keep both placements because the number of valence electrons gives the period.
 - Place both in Period 2 because each has a filled inner shell.
- Jannah Club labels an atom model for a school exhibit. Where should it place the electrons?
 - In the nucleus with the protons
 - In regions outside the nucleus
 - Only inside the neutrons
 - Inside the protons
- An element's profile highlights the electrons in its outermost occupied shell. What are these electrons called?
 - Valence electrons
 - Neutrons
 - Protons
 - Inner-shell electrons
- A periodic-table display asks learners which feature of a neutral atom's ground-state shell arrangement indicates its period. Which feature should they identify?
 - Number of neutrons
 - Number of particles in the nucleus
 - Number of occupied energy levels
 - Number of valence electrons alone
- Julian says the circles in a Bohr diagram are the exact paths electrons follow. What does the electron-cloud model show that corrects this idea?
 - All electrons are found inside the nucleus.
 - An electron is fixed at one point on each circle.
 - The cloud represents regions where an electron is likely to be found.
 - Each electron follows a visible track with a known position at every instant.
- A class builds a 200-tile model of Earth's surface. To represent 29% land, it uses 58 green tiles for continents and islands. How many blue tiles should represent water in the completed model?
 - 171
 - 142
 - 71
 - 58
- Two imaginary map panels each represent 100 equal units of area. Panel A has 70 units of water and 30 of land. Panel B has 40 units of water and 60 units of land. A learner joins the panels. Which analysis correctly describes the combined area?
 - It is 110% water because the two water amounts should be added as percentages.
 - It is 70% water because the panel with more water determines the combined proportion.
 - It is 55% water and 45% land because water covers 110 of the 200 units.
 - It is 71% water because every pair of regional maps must match the global figure.
- A learner compares two maps. Map A shows a small coastal region whose frame contains mostly land. Map B shows the whole Earth, with much more water than land. The learner says, "Map A proves the global 71% water figure is wrong." What is the main error in this reasoning?
 - The learner assumes that water cannot occur beside a large land area.
 - The learner should count the number of islands instead of comparing areas.
 - The learner should ignore all coastlines when measuring surface coverage
 - The learner treats the land–water balance of one small region as the balance of the entire planet.
- A school exhibit claims, "Bodies of water cover more of Earth's surface than land." Which evidence is most suitable for evaluating that global claim?
 - A school-ground plan showing that most of the campus is land
 - A map showing only an ocean, with no continents in the frame
 - A list comparing the number of named oceans with the number of continents
 - A whole-Earth surface summary showing about 71% water and 29% land

13. A team must design a "Land and Bodies of Water" card. It needs a 100-square global model, a correct color key, and a note about regional differences. Which plan combines these requirements accurately?
- Shade 71 green and 29 blue squares; label green as land and blue as water; say regions can differ.
 - Shade 71 blue and 29 green squares; label blue as water and green as land; state that every country must have this exact ratio.
 - Shade 71 blue and 29 green squares; label blue as water and green as land; state that local regions need not have the same ratio.
 - Shade 71 blue and 29 green squares; label blue as land and green as water; say regions can differ.
14. An aluminum label gives an atomic number of 13. Which particle count does this number identify directly?
- 3 valence electrons
 - 13 protons
 - 27 particles in the nucleus
 - 14 neutrons
15. A class card labels an isotope with mass number 27. What does its mass number count?
- Protons and neutrons together
 - Protons and electrons together
 - Only the electrons in the outer shell
 - Neutrons and electrons together
16. A learner draws a Lewis electron-dot diagram for an element profile. What should the dots represent?
- All protons in the nucleus
 - All electrons in every shell
 - All neutrons in the atom
 - Only the valence electrons
17. A neutral aluminum atom has 13 electrons arranged 2,8,3. Why should its Lewis diagram contain three dots rather than thirteen?
- Only three of its electrons have mass.
 - Aluminum's atomic number changes to three in a dot diagram.
 - The other ten electrons are inside the nucleus.
 - The diagram represents outer-shell electrons rather than all electrons.
18. A teacher compares lithium, sodium, and potassium in Group 1. Each has one valence electron. Why does this pattern help explain their similar chemical behavior?
- Valence electrons are involved in chemical interactions, and these atoms have the same outer-shell count.
 - Their neutron counts must all be the same.
 - They have the same number of occupied shells.
 - They have identical total electron counts.
19. A learner completes an identity card for a neutral aluminum-27 atom. Its atomic number is 13, and its mass number is 27. Which set of particle counts is correct?
- 13 protons, 14 neutrons, 13 electrons
 - 27 protons, 13 neutrons, 27 electrons
 - 14 protons, 13 neutrons, 14 electrons
 - 13 protons, 27 neutrons, 13 electrons
20. A neutral magnesium atom is assigned atomic number 12 and mass number 24. A learner writes 12 protons and 12 electrons. How many neutrons should complete the record?
- 36
 - 12
 - 24
 - 6
21. Two neutral carbon cards both have an atomic number of 6. Card P has a mass number of 12; card Q has a mass number of 14. Which comparison explains how they remain the same element while having different mass numbers?
- Q has two more protons, while their neutron counts are equal.
 - P and Q have different proton counts and therefore different identities.
 - Both have six neutrons, but Q has two more electrons.
 - Both have six protons and six electrons, but Q has two more neutrons.
22. A globe display uses blue for oceans and other bodies of water. Approximately what proportion of Earth's total surface is water?
- 29%
 - 90%
 - 71%
 - 50%
23. A world map legend groups continents and islands as land. Approximately what proportion of Earth's total surface should the land category represent?
- 29%
 - 71%
 - 90%
 - 50%
24. A learner counts many islands on a world map and concludes that land must cover more of Earth than water. Why does the number of islands alone not support that conclusion?
- Only continents, not islands, count as land.
 - Water area is determined by how many oceans are named.
 - Surface coverage depends on total area, not the number of separate landforms.
 - Every island has the same area as an ocean.
25. A class compares maps of the Northern and Southern Hemispheres. One shows more land, while the other shows more water. How can both maps agree with the global figure of about 71% water and 29% land?
- Land on one hemisphere is excluded when global coverage is calculated.
 - The global figure combines regions with different amounts of land and water.
 - The global figure describes only the hemisphere with more water.
 - Each hemisphere must separately show exactly 71% water.