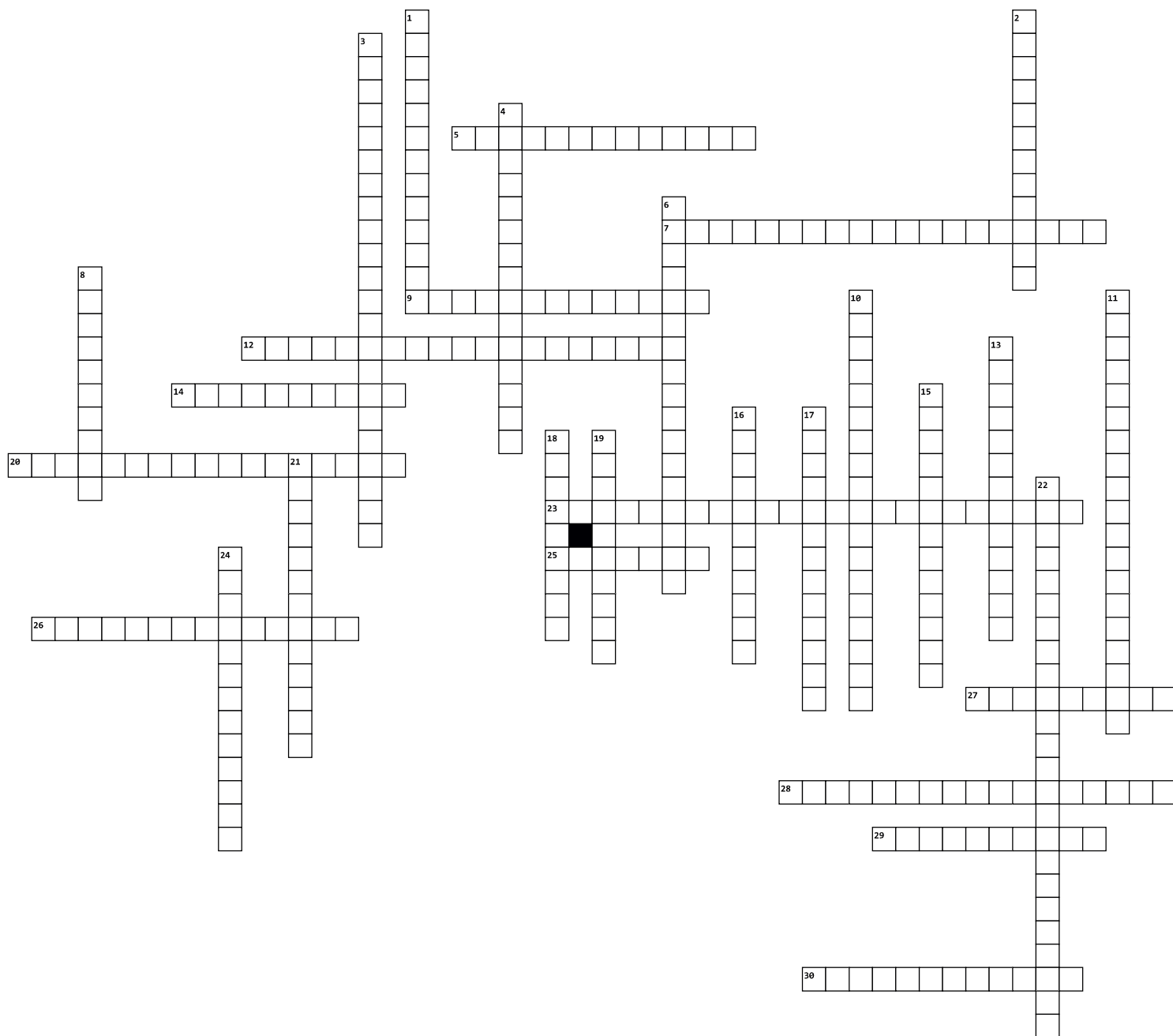


# Chemical Bonding



## Across

- 5.** The hypothetical charge on an atom in a molecule, assuming equal sharing of electrons in bonds.
- 7.** A molecular orbital that weakens the bond between two atoms and has higher energy than the atomic orbitals from which it was formed.
- 9.** A measure of the separation of positive and negative charges in a molecule.
- 12.** A diagram showing the bonding between atoms and the lone pairs of electrons in a

## Down

- 1.** A chemical bond formed by the sharing of electron pairs between atoms.
- 2.** The radius of an atom's ion in a crystal lattice, differing for cations and anions.
- 3.** The energy change that occurs when an electron is added to a neutral atom to form a negative ion.
- 4.** A three-dimensional arrangement of atoms or ions in a crystalline solid.

molecule using dots to represent electrons.

**14.** A bond formed by the direct overlap of atomic orbitals along the internuclear axis.

**20.** Orbitals that belong to the entire molecule rather than to a single atom, formed by the combination of atomic orbitals.

**23.** The concept that electron pairs around a central atom will arrange themselves to be as far apart as possible, minimizing repulsive forces.

**25.** A bond formed by the side-by-side overlap of atomic orbitals, with electron density above and below the plane of the nuclei.

**26.** Orbitals that are formed by the mixing of atomic orbitals on the same atom to form equivalent orbitals for bonding.

**27.** The concept where a molecule is represented by two or more structures (resonance structures) that together depict the bonding in the molecule.

**28.** The ability of an atom to attract electrons in a chemical bond.

**29.** A bond formed by the transfer of electrons from one atom to another, leading to the formation of positively and negatively charged ions.

**30.** Valence Shell Electron Pair Repulsion theory, used to predict the geometry of molecules based on the repulsion between electron pairs.

**6.** The outermost electrons of an atom, which are involved in forming chemical bonds.

**8.** The number of chemical bonds between a pair of atoms.

**10.** The three-dimensional arrangement of atoms in a molecule.

**11.** A covalent bond where the electrons are not shared equally, leading to partial charges.

**13.** The process by which atomic orbitals mix to form new hybrid orbitals with equivalent energy and shape.

**15.** The distribution of electrical charge over the atoms joined by the bond, which results in partial positive and negative charges.

**16.** The average distance between the nuclei of two bonded atoms.

**17.** The attractive force that holds atoms together in a molecule or compound.

**18.** A pair of valence electrons that are not shared with another atom and are found in the outermost electron shell.

**19.** Atoms combine by gaining, losing, or sharing electrons to achieve a stable octet in their valence shells.

**21.** The energy required to break one mole of bonds in a gaseous substance.

**22.** The energy required to break the bond between two covalently bonded atoms.

**24.** A weak bond between a hydrogen atom, which is covalently bonded to a more electronegative atom, and another electronegative atom.