

Parts Of An Atom Worksheet Questions and Answers PDF

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Part 1: Building a Foundation

What is the charge of a proton?
Hint: Think about the basic properties of subatomic particles.
○ Neutral
○ Positive ✓
○ Negative
O No charge
A proton has a positive charge.
Which of the following particles are found in the nucleus of an atom?
Which of the following particles are found in the nucleus of an atom? Hint: Consider the components that make up the nucleus.
Hint: Consider the components that make up the nucleus.
Hint: Consider the components that make up the nucleus. Electrons
Hint: Consider the components that make up the nucleus. ☐ Electrons ☐ Protons ✓

Explain the role of electrons in an atom.

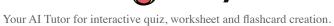
Hint: Consider their charge and position relative to the nucleus.



Electrons are negatively charged particles that orbit the nucleus and are involved in chemical bonding.
List the three main subatomic particles and their charges.
Hint: Think about the basic building blocks of an atom.
1. Proton
Positive
2. Neutron
Neutral
3. Electron
Negative
The three main subatomic particles are protons (positive), neutrons (neutral), and electrons (negative).
What determines the atomic number of an element?
Hint: Consider the defining characteristics of an element.
O Number of electrons
Number of neutrons



○ Number of protons ✓
Number of valence electrons
The atomic number is determined by the number of protons in the nucleus.
Part 2: comprehension and Application
Which part of the atom accounts for most of its volume?
Hint: Think about where the electrons are located.
○ Nucleus
○ Electron cloud ✓
○ Protons○ Neutrons
The electron cloud accounts for most of the atom's volume.
Which statements are true about isotopes?
Hint: Consider the definition and characteristics of isotopes.
☐ They have the same number of protons. ✓
☐ They have different numbers of neutrons. ✓
☐ They have different atomic numbers.☐ They have the same atomic mass.
Isotopes have the same number of protons but different numbers of neutrons.
Describe how the atomic mass of an element is calculated.
Hint: Consider the contributions of protons and neutrons.





Atomic mass is calculated by adding the number of protons and neutrons in the nucleus.
If an atom has 6 protons, 6 neutrons, and 6 electrons, what is its atomic mass?
Hint: Remember that atomic mass is the sum of protons and neutrons. ○ 6 ○ 12 ✓ ○ 18 ○ 24
The atomic mass is 12, as it is the sum of 6 protons and 6 neutrons.
An atom has 7 electrons in its outer shell. Which of the following are likely properties of this atom?
Hint: Consider the stability and reactivity of atoms based on their electron configuration. ☐ Highly reactive ✓ ☐ Stable ☐ Likely to gain an electron ✓ ☐ Likely to lose an electron
Atoms with 7 outer shell electrons are typically highly reactive and likely to gain an electron.
Predict what happens to the atomic number and mass number when a neutron is added to an atom.
Hint: Consider the definitions of atomic number and mass number.
The atomic number remains the same, but the mass number increases by one. Part 3: Analysis, Evaluation, and Creation



properties?	
Hint: Think about the role of neutrons in isotopes.	
O Different numbers of protons	
O Different numbers of electrons	
○ Different numbers of neutrons ✓	
O Different electron configurations	
Isotopes have different numbers of neutrons, which affects their physical properties.	
Analyze the following statements and identify which are true regarding electron configuration:	
Hint: Consider the rules governing electron arrangement in atoms.	
☐ Electrons fill the lowest energy levels first. ✓	
□ Valence electrons determine chemical reactivity. ✓	
☐ Electrons in the same shell have the same energy.	
Electrons are shared between atoms in ionic bonds.	
Electrons fill the lowest energy levels first, and valence electrons determine chemical reactivity.	
Analyze how the arrangement of electrons affects the chemical properties of an element. Hint: Consider the role of valence electrons in bonding.	
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The arrangement of electrons, particularly valence electrons, determines how an element interacts and bonds with other elements.	
Which element is most likely to form a stable ion by losing one electron?	
Hint: Think about the electron configurations of the elements.	
○ Helium	

Which of the following best explains why isotopes of the same element have different physical



0	Sodium ✓ Chlorine
\bigcirc	Neon
	Sodium is most likely to form a stable ion by losing one electron.
Ev	aluate the following scenarios and select which would result in a stable atom:
Hir	nt: Consider the electron configurations that lead to stability.
	An atom with a full outer electron shell. ✓ An atom with one electron in its outer shell. An atom with eight electrons in its outer shell. ✓ An atom with seven electrons in its outer shell.
	An atom is stable if it has a full outer electron shell or eight electrons in its outer shell.
Hir	nt: Consider methods used in isotope analysis.
	An experiment could involve mass spectrometry to analyze the isotopic ratios of carbon in the sample.
	opose two real-world applications of isotopes and explain their significance.
	Medical imaging
	Isotopes are used in PET scans.



2. Carbon dating	
Isotopes help determine the age of artifacts.	
Isotopes are used in medicine for imaging and treatment, and in archaeology for dating artifacts.	