

Isotope Worksheet

Part 1: Building a Foundation

Isotope Worksheet

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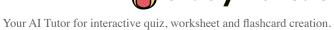
What is an isotope?
Hint: Consider the definition related to neutrons.
 An element with a different number of electrons An element with a different number of protons An element with a different number of neutrons An element with a different number of atoms
Which of the following statements are true about isotopes?
Hint: Think about atomic number and mass number.
 ☐ Isotopes have the same atomic number. ☐ Isotopes have different mass numbers. ☐ Isotopes have different numbers of protons. ☐ Isotopes have the same number of neutrons.
Explain how isotopes of the same element differ from each other.
Hint: Focus on neutrons and mass.

List two applications of isotopes in the real world.



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Hint: Think about medicine and industry.
1. Application 1
2. Application 2
2.7 ppriodion 2
Part 2: Comprehension and Application
Which isotope notation correctly represents an isotope of carbon with 7 neutrons?
Hint: Consider the mass number and atomic number.
○ ^13_6C ○ ^12_6C
○ ^14_6C
○ ^13_7C
Which of the following are characteristics of radioactive isotopes?
Hint: Think about stability and radiation.
☐ They are stable over time.
☐ They emit radiation as they decay.
They have the same number of neutrons as stable isotopes.
☐ They can be used in medical imaging.
Describe how the average atomic mass of an element is calculated using its isotopes.
Hint: Consider the contributions of each isotope's mass and abundance.
Time. Consider the continuations of each isotope's mass and abundance.





abundance), what is the average atomic mass?
Hint: Use the formula for average atomic mass.
○ 10.1 amu
○ 10.5 amu
○ 10.9 amu
○ 11.0 amu
Provide an example of how isotopes are used in medicine and explain their role.
Hint: Think about specific isotopes and their applications.
Part 3: Analysis, Evaluation, and Creation
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Compare and contrast the uses of stable and radioactive isotopes in scientific research.
Hint: Think about their applications and safety.
Which isotope would be most suitable for use in a smoke detector?
Hint: Consider the properties of isotopes used in detection.
○ Carbon-12
Americium-241
O lodine-131
○ Hydrogen-2
Evaluate the following scenarios and select the most appropriate isotopes for medical imaging:
Hint: Think about the properties of isotopes used in imaging.
☐ Technetium-99m
☐ Carbon-14
☐ lodine-123
Strontium-90
Design a simple experiment using isotopes to trace the movement of nutrients in a plant system. Describe the steps and expected outcomes.
Hint: Consider how isotopes can be tracked in biological systems.