

Name _____

Date _____ Period _____

WHAT IS AN ISOTOPE?

Video notes: Complete as you watch *What is an Isotope? With REU student, Jessica Miles*

1. Inside atoms are: protons, _____ and electrons.
2. An element is defined by its atomic number or the number of positively charged (circle one) protons/neutrons/electrons in its nucleus.
3. Can atoms have a different number of neutrons in their nucleus and still be the same element? Yes/No (circle one)
4. What is different about atoms with a different number of neutrons? (circle one)
their charge
their color
their mass
their spin
5. Varieties of different atoms of the same element are called _____.
6. Jessica is looking for isotopes of two elements, strontium, number _____ and neodymium, number _____.
7. Evidence of strontium can give information about the chemical composition of a glacier and neodymium can determine the _____ of the bedrock that the glacier erodes.
8. Strontium levels vary in a glacier depending on the type of _____ that the glacier sits on.

Extra notes:

- Column chemistry is a way to purify samples and extract just the compounds that are desired from an entire mixture (in this case the mud).
- A mass spectrometer is an instrument that can measure the mass and relative concentrations of atoms in a sample.
- By analyzing isotopes in glaciers we can see how climate is affecting glaciers in different locations of the world.

9. When you have completed the lesson, give two examples of science research that use isotopes as part of the investigation. (If you are not sure, you can look online.)

1.

2.

Use your periodic table to fill in the number of protons and neutrons for each atom. The number after the element name is the mass number and is equal to the number of particles (protons and neutrons) in the atom's nucleus.

	Chromium-58	Chromium-63
# of protons		
# of neutrons		

	Carbon-12	Carbon-13	Carbon-14
# of protons			
# of neutrons			

	Nitrogen-15	Nitrogen-20
# of protons		
# of neutrons		

	Sulfur-23	Sulfur-25
# of protons		
# of neutrons		

	Sodium-12	Sodium-20
# of protons		
# of neutrons		

	Selenium-50	Selenium-55
# of protons		
# of neutrons		

Use your periodic table to fill in the missing information

# of protons	25	
# of neutrons	17	15

# of protons	32	
# of neutrons	30	32

	Germanium-	Germanium-
# of protons		
# of neutrons	33	36

	-54	-56
# of protons	24	
# of neutrons		

	Iron-	Iron-
# of protons		
# of neutrons	27	30

	Iodine-	Iodine-
# of protons		
# of neutrons	32	35