

Combined Science - Chemistry - Key Stage 4
Atomic Structure & the Periodic Table

Isotopes

Dr Patel



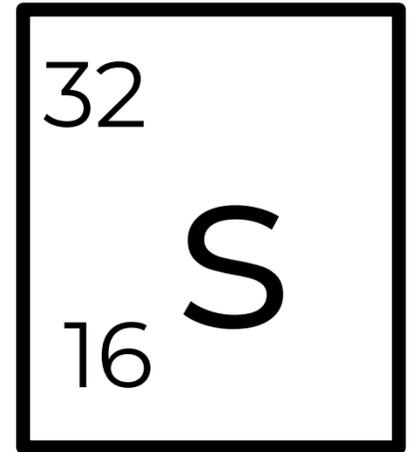
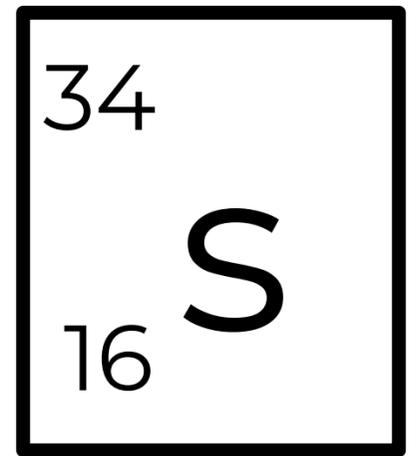
Warm up

1. In which part of an atom are protons and neutrons found?
2. What is the mass of a neutron?
3. What is the mass of a proton?



Independent practice

1. Define the term isotope.
2. There are two isotopes of sulfur (see diagram).
 - a) How many protons are there in sulfur?
 - b) How many electrons are there in sulfur?
 - c) How many neutrons are there in each isotope of sulfur?
 - d) What is the same about these two elements?
 - e) What is different about these isotopes of sulfur?

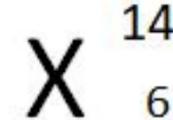
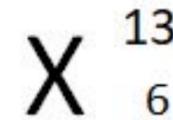
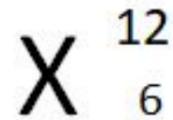


Comparing isotopes

Checklist:

- State the definition of an isotope
- State what is the same
- State what is different
- State the number of each particle
- State the name of the element
(atomic number of periodic table)

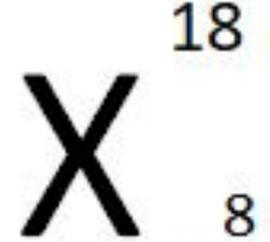
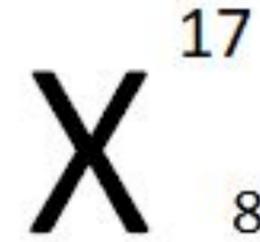
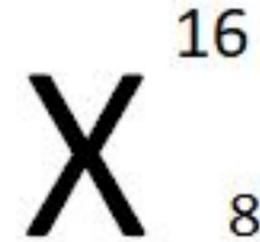
Compare the three isotopes



Comparing isotopes

Checklist:

- State the definition of an isotope
- State what is the same
- State what is different
- State the number of each particle
- State the name of the element
(atomic number of periodic table)



Independent practice

1. Sulphur has 2 naturally occurring isotopes:

94.99% of mass number 32

5.01% of mass number 34.

Calculate the relative atomic mass of Sulphur. Give your answer to 1 decimal place.

2. Copper has two naturally occurring isotopes.

69% of all Copper has a mass number of 63

31% of all Copper has a mass number of 65

Calculate RAM to 3 significant figures.



Independent practice

3. Magnesium has three naturally occurring isotopes.

79% of all Magnesium is Mg^{24}

11% of all Magnesium is Mg^{25}

10% of all Magnesium is Mg^{26}

Calculate the RAM of Mg. Give your answer to 3 significant figures

4. Silicon has 3 naturally occurring isotopes. Calculate the RAM to 3 decimal places.

92% of Silicon is Si^{28}

5.5% of all Silicon is Si^{29}

2.5% of the sample is Si^{30}

