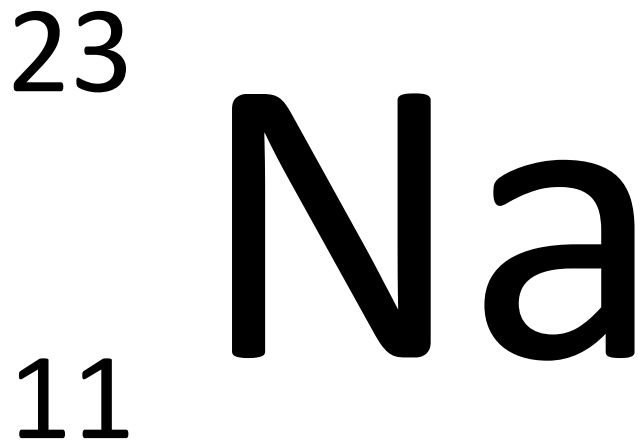
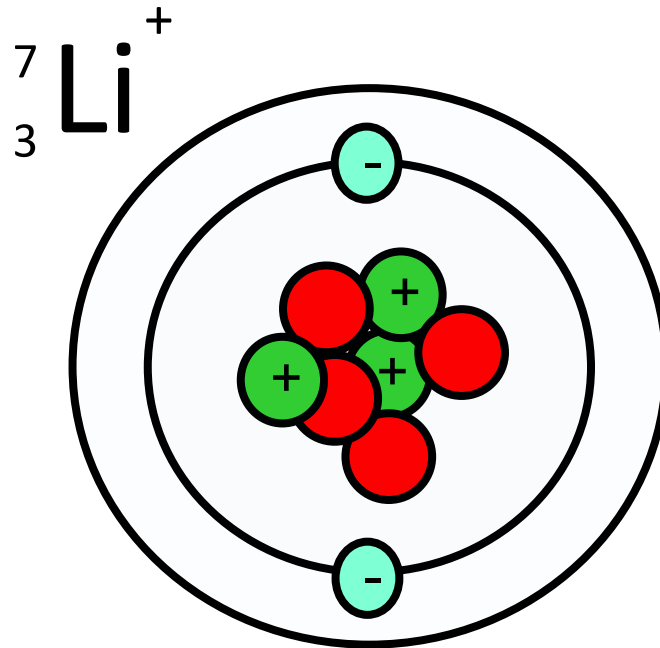
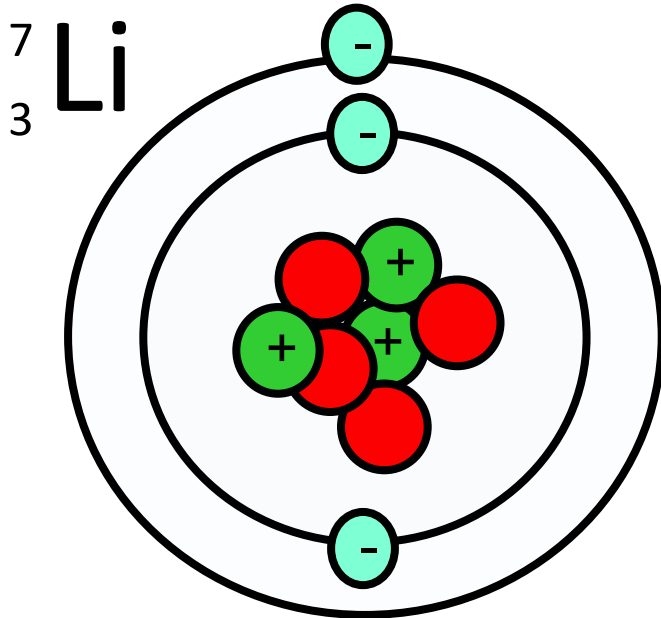
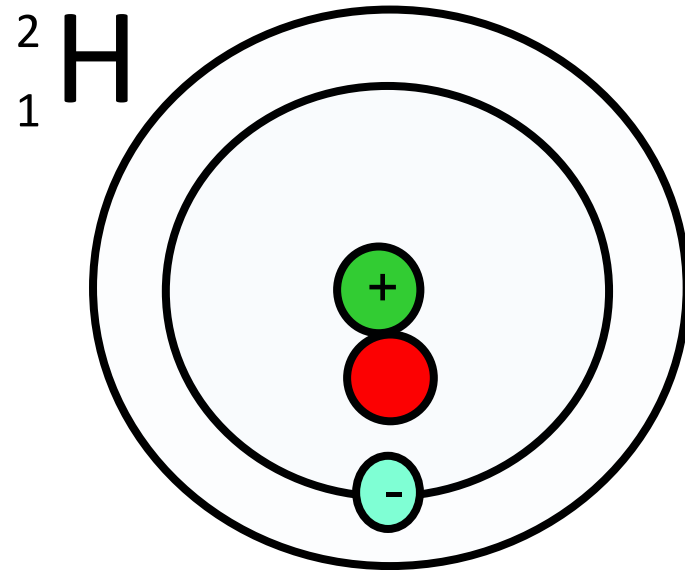
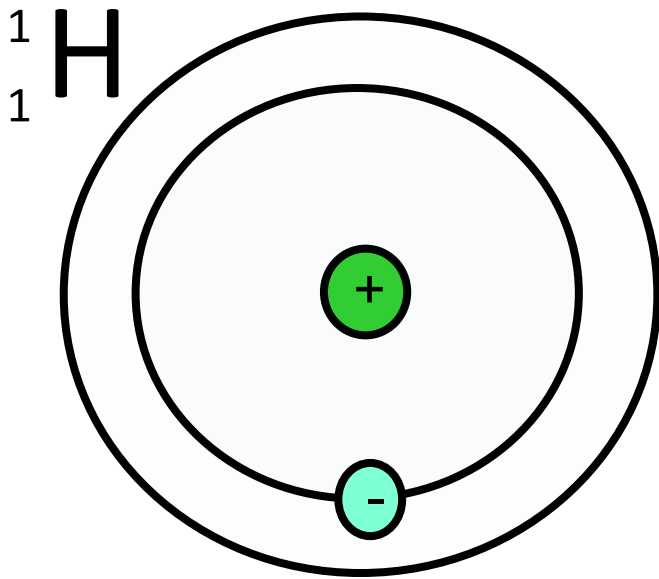


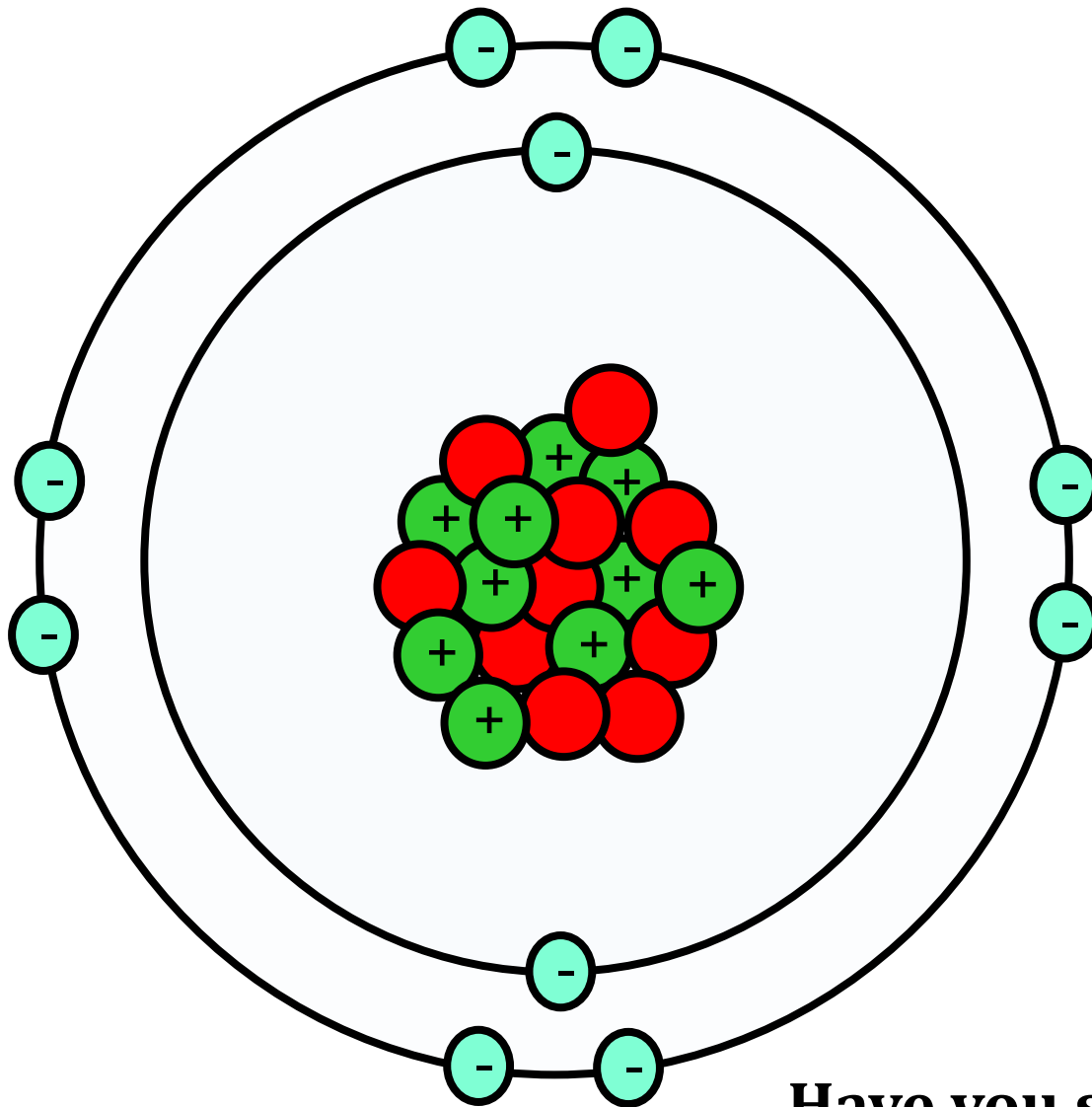
| | | | |
|---------------------------------|--|--------------|--|
| Topic | Atomic structure – mass and atomic numbers | Level | GCSE (or any course for students aged 11-16) |
| Outcomes | To understand: <ul style="list-style-type: none"> the relationship between the number of protons and number of electrons in atoms that the majority of the mass of an atom is located in the nucleus that it is the number of protons that determine the element and not the number of neutrons or electrons how electrons are arranged in atoms how to calculate the number of protons, neutrons and electrons from the atomic and mass numbers | | |
| Information for teachers | <p>This activity can be used to introduce atomic and mass numbers. It could be used near the start of teaching on atomic structure to focus student thinking on what the atomic and mass numbers actually mean. Students need to know that atoms are made from three types of subatomic particle before completing this activity in pairs. After completing this activity students will need to practice what they've learnt by calculating numbers of protons, electrons and neutrons for a variety of other atoms.</p> | | |
| Pedagogy focus | <p>Models in science: https://thescienceteacher.co.uk/models-in-science/</p> | | |
| Other resources | <p>Other resources on atomic structure are here: https://thescienceteacher.co.uk/atomicstructure/</p> | | |

What do these
numbers tell us about
atomic structure?





Write down everything you can deduce about atomic structure from these four diagrams



?
?
X

Have you spotted the pattern?

What atom is this?

What is the atomic number?

What is the mass number?

What have you learnt about atomic structure?

1. What is the relationship between the number of protons and number of electrons in atoms?
2. Do the number of protons, neutrons or electrons determine what the element is? Explain your answer.
3. Why do you think it's called a mass number?
4. How many electrons can fit in the first shell of each atom?
5. How many electrons can fit in the second shell of each atom?
6. Draw an atom of aluminum showing all the protons, neutrons and electrons?
7. Draw an atom of sulfur showing only the electrons.
8. Why is it difficult to draw an atom of copper?
9. In this model, electrons are shown as similar in size to protons and neutrons. **This is not true.** What other limitations are present in these diagrams?