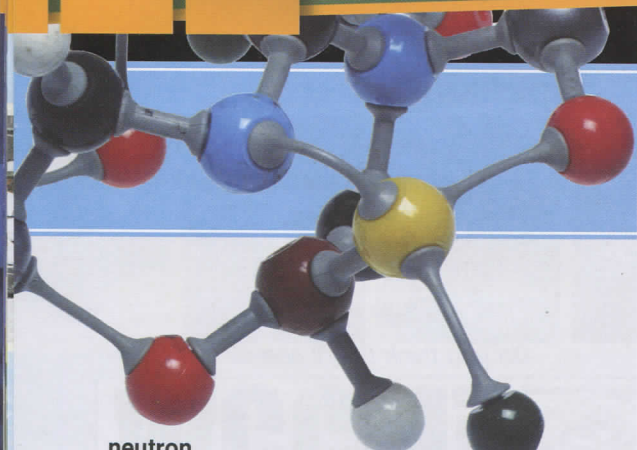


### Simplifying Common Matter

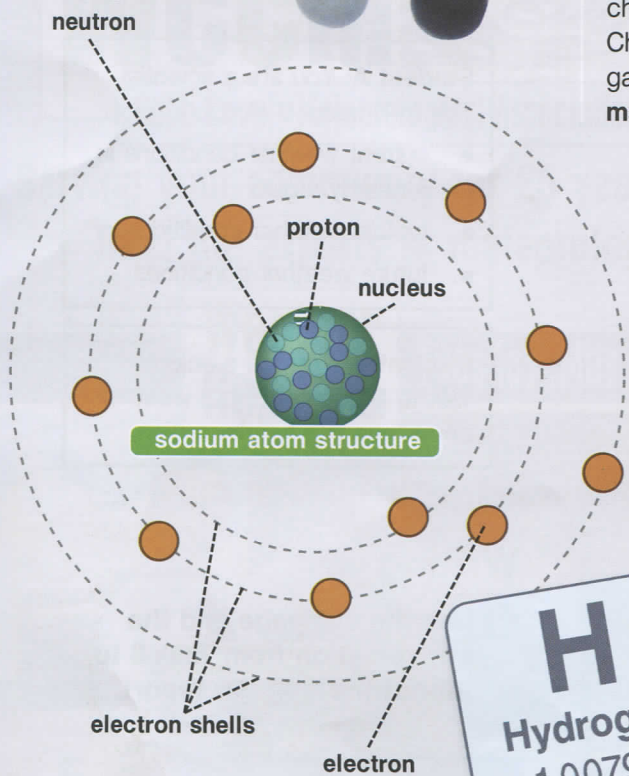
#### Substance: Rock Salt



Common rock salt is a chemical **compound**. Its **molecules** are made up of two **elements**: sodium and chlorine.

Sodium has an **atomic number** of 11. This means that each **atom** contains 11 **protons**. Therefore, the protons must be balanced out by 11 **electrons**. Sodium, when it loses one electron, becomes a positively charged ion.

Chloride is a negatively charged **ion**. It is made when a chlorine atom gains an extra electron. Chlorine has an atomic number of 17 and a **mass number** of 35. This is the sum of its 17 protons plus 18 **neutrons**.



**H**

Hydrogen

1.00794

1s

13.5984

### Get ready!

1 Before you read the passage, talk about these questions.

- 1 What are the parts of an atom?
- 2 Which part has a positive charge?

### Reading

2 Read the quick guide. Then, mark the following statements as true (T) or false (F).

- 1  Multiple elements are present in sodium.
- 2  Sodium contains equal numbers of protons and electrons.
- 3  Chlorine contains more protons than sodium.

### Vocabulary

3 Match the words (1-5) with the definitions (A-E).

- |                                    |                                     |
|------------------------------------|-------------------------------------|
| 1 <input type="checkbox"/> proton  | 4 <input type="checkbox"/> electron |
| 2 <input type="checkbox"/> matter  | 5 <input type="checkbox"/> compound |
| 3 <input type="checkbox"/> neutron |                                     |

- A anything containing material and taking up space
- B a positively charged part of an atom
- C a negatively charged part of an atom
- D a part of an atom without a charge
- E a combination of two or more elements

4 Read the sentence pairs. Choose where the words best fit the blanks.

- 1 **atom / ion**
  - A An \_\_\_\_\_ has a positive or a negative charge.
  - B An \_\_\_\_\_ contains equal numbers of protons and electrons.
- 2 **atomic number / mass number**
  - A Every atom of chlorine has the same \_\_\_\_\_.
  - B One atom of chlorine might have a different \_\_\_\_\_ than another.
- 3 **element / molecule**
  - A A(n) \_\_\_\_\_ contains only one type of atom.
  - B A(n) \_\_\_\_\_ can contain multiple types of atoms.

- 5 Listen and read the quick guide again. What is the atomic number of sodium?

## Listening

- 6 Listen to a conversation between an instructor and a student. Choose the correct answers.

- What is the main idea of the conversation?  
A methods for identifying chlorine  
B the difference between elements and compounds  
C which substance has the highest atomic number  
D the number of protons and neutrons in an element
- What does the student identify incorrectly?  
A the compound in salt  
B the elements in a compound  
C the mass number of sodium chloride  
D the atomic number of chlorine

- 7 Listen again and complete the conversation.

**Instructor:** Okay, Ralph. What's the 1 \_\_\_\_\_ in rock salt?

**Student:** Let's see. That's 2 \_\_\_\_\_, right?

**Instructor:** Correct. And what's the 3 \_\_\_\_\_ of sodium?

**Student:** Well, it often has a 4 \_\_\_\_\_ of eleven.

**Instructor:** Not quite. That only includes the protons. It usually has 5 \_\_\_\_\_, too.

**Student:** Oh, so eleven is the atomic number. I always get those mixed up.

**Instructor:** That's okay. It 6 \_\_\_\_\_ a lot of students. Do you want to try again?



## Speaking

- 8 With a partner, act out the roles below based on Task 7. Then switch roles.

### USE LANGUAGE SUCH AS:

*What's the compound in ...?*  
*What's the chemical makeup of ...?*  
*I always get those ...*

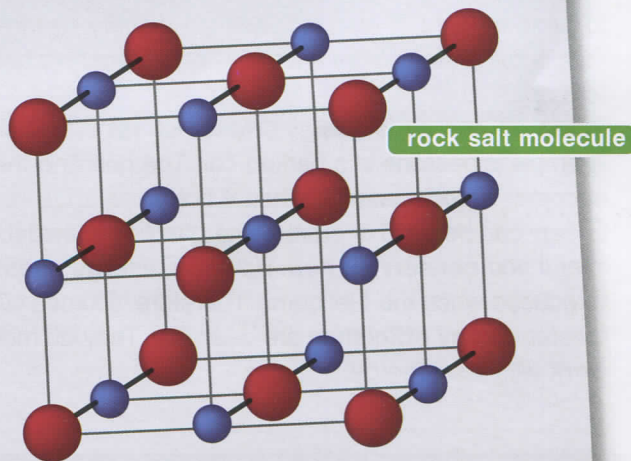
**Student A:** You are an instructor. Talk to Student B about:

- a chemical compound
- properties of the compound
- an error he or she makes

**Student B:** You are a student. Talk to Student A about a chemical compound.

## Writing

- 9 Use the quick guide and the conversation from Task 8 to fill out the student's notes.



## Notes

Substance: Rock Salt

Compound: \_\_\_\_\_

No. of protons and neutrons: \_\_\_\_\_

Mass number: \_\_\_\_\_