


# VIRTUAL REALITY

SCIENCE GAME





*In a short moment you'll step into another world.  
A world where you and your partner are the best of  
friends, but many light-years, moons and stars apart.  
One of you are back home on Earth, the other is located  
on a space station at the extrasolar planet Proxima B.*

*Right now it's definitely no fun being at the space station:  
All the other crewmembers have caught and eaten by an  
extremely intelligent extraterrestrial life form. The only  
way to avoid getting eaten yourself, is to find the escape  
pod and leave Proxima B ASAP.*

***Unfortunately the escape pod is protected by an  
ingenious code, which can only be cracked if you  
know all the details of the human-made Periodic Table  
by heart...***

*- Ooh, damn. If only you had paid more attention in  
school!*

*There is, however, a small chance for you to survive  
and see each other again. Because back on Earth  
exists a manual, which will help you crack the  
code – and even from Proxima B, it is possible  
to call a friend...*

## THE GAME

Up'n'Atom is a multiplayer game where you need to work closely with your partner. One player is wearing the VR headset while the other is in charge of the manual, where the solutions to the game's puzzles can be found. The goal of the game is to gain access to the escape pod by finding the right combinations for the door locks. Each combination consists of three numbers, namely the number of protons, electrons and neutrons of a certain chemical element.

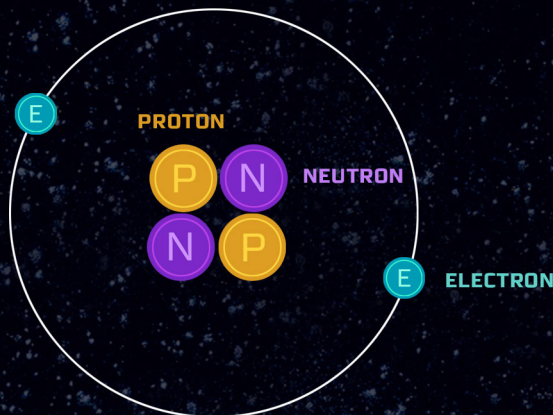
### Player 1: MANUAL

- Your task is to figure out which is the correct chemical element by listening to the clues that your partner gives you, and compare these to the information you find in the manual.
- There may be one or more clues, but there is always only one correct chemical element, that can open the lock.
- When you have found the right chemical element, you need to find out how many protons, electrons and neutrons it has, and tell those three numbers to your partner.

### Player 2: VR-HEADSET

- When you've put on the headset, you'll enter a room in which you can find one or more clues that tell you something about a particular chemical element.
- Your task is now to describe these random clues to your partner as well as you can.
- When you and your partner have figured out which chemical element the clues describe, you need to type in the number of protons, electrons and neutrons on the three displays. If you type in the correct numbers, you will open one of the locks!





**IN ORDER TO BUILD AN ATOM YOU WILL NEED TO KNOW THE NUMBER OF PROTONS, NEUTRONS AND ELECTRONS.**



## HOW MANY PROTONS?

All chemical elements have a unique atomic number – that number tells how many protons it has.

**NUMBER OF PROTONS = ATOMIC NUMBER**



## HOW MANY ELECTRONS?

All chemical elements that are neutral have exactly as many electrons as protons. (In this game we only deal with neutral elements).

**NUMBER OF ELECTRONS = NUMBER OF PROTONS**



## HOW MANY NEUTRONS?

The weight (the atomic mass) is equal to the compound number of protons and electrons: If you subtract the number of protons from the weight, you'll get the number of neutrons!

**NUMBER OF NEUTRONS = WEIGHT - NUMBER OF PROTONS**



**HELIUM** HAS THE ATOMIC NUMBER 2, WHICH MEANS THAT IT HAS **2 PROTONS AND 2 ELECTRONS.**

ATOM-NUMBER	NAVN	KEMISK SYMBOL	ATOMMASSE (VÆGT I UNIT)
1	HYDROGEN	H	1 U
2	HELIUM	He	4 U

**HELIUM** HAS THE ATOMIC MASS (WEIGHT) 4. WHEN YOU SUBTRACT THE 2 PROTONS YOU ARE LEFT WITH **2 NEUTRONS.**

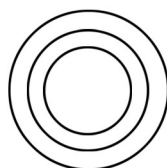
	Group 1	Group 2	Subgroups										Group 3	Group 4	Group 5	Group 6	Group 7	Group 8
Period 1	1 H Hydrogen																	2 He Helium
Period 2	3 Li Lithium	4 Be Beryllium	The periodic table is a tabular arrangement of all the known chemical elements, ordered by their atomic number.										5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
Period 3	11 Na Sodium	12 Mg Magnesium											13 Al Aluminium	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon
Period 4	19 K Potassium	20 Ca Calcium	21 Sc Scandium	22 Ti Titanium	23 V Vanadium	24 Cr Chromium	25 Mn Manganese	26 Fe Iron	27 Co Cobalt	28 Ni Nickel	29 Cu Copper	30 Zn Zinc	31 Ga Gallium	32 Ge Germanium	33 As Arsenic	34 Se Selenium	35 Br Bromine	36 Kr Krypton

## PERIODS

Man kalder de vandrette rækker i det periodiske system for The horizontal rows in the periodic table are called periods. **The period in which a chemical element is placed, tells you how many electron shells it has.**



*Magnesium (Mg) is placed in the 3rd row, which means that it belongs in the 3rd period and that its electrons are distributed across three shells.*



## GROUPS

The periodic table has 18 vertical columns. There are 8 main groups and 10 subgroups. **The main groups 1-8 are divided by how many electrons the chemical element has in its outer electron shell.**



*Magnesium (Mg) is placed in Group 2, which means that it has two electrons in its outer shell.*

