

ELEMENTS, MIXTURES, AND COMPOUNDS

What Are Elements?

Elements are a basic (simple) kind of matter. They can't be broken down into simpler parts and still keep their properties because they are in the simplest form.

What Are Atoms?

Atoms are the smallest particle or component of an element that still has the same properties of that element.

The Make-Up of an Atom



The illustration shows a group of diverse children standing on a green patch of grass. Above them are four thought bubbles containing various scientific and mathematical icons: a cube, a microscope, a protractor, a globe, a flask, a pencil, an atom, a pie chart, a bar graph, and a calculator. The word 'PREVIEW' is written in large, bold, blue and orange letters below the children. Below the preview text, there is a call to action: 'Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet'.

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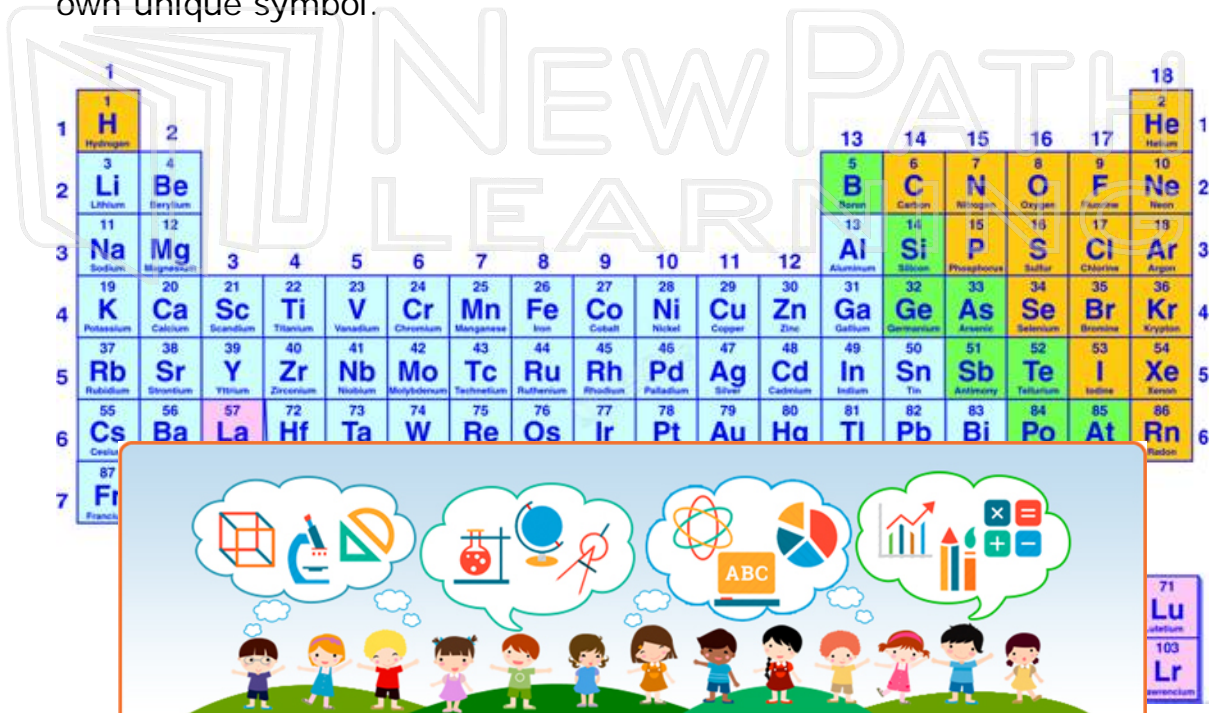
that number is unique to that atom. For example, sodium has 11 protons, which means NO other atom has 11 protons. Atoms also contain electrons. Electrons have a negative charge, move around the protons and neutrons, and can move from atom to atom.

Lesson Checkpoint: How is an atom identified?



How Are Elements Grouped?

The **Periodic Table** groups elements in an organized fashion. Each box on the periodic table represents one element. Each element has its own unique symbol.



1																	18
1 H Hydrogen																	2 He Helium
3 Li Lithium	4 Be Beryllium											5 B Boron	6 C Carbon	7 N Nitrogen	8 O Oxygen	9 F Fluorine	10 Ne Neon
11 Na Sodium	12 Mg Magnesium	3	4	5	6	7	8	9	10	11	12	13 Al Aluminum	14 Si Silicon	15 P Phosphorus	16 S Sulfur	17 Cl Chlorine	18 Ar Argon
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
37 Rb Rubidium	38 Sr Strontium	39 Y Yttrium	40 Zr Zirconium	41 Nb Niobium	42 Mo Molybdenum	43 Tc Technetium	44 Ru Ruthenium	45 Rh Rhodium	46 Pd Palladium	47 Ag Silver	48 Cd Cadmium	49 In Indium	50 Sn Tin	51 Sb Antimony	52 Te Tellurium	53 I Iodine	54 Xe Xenon
55 Cs Cesium	56 Ba Barium	57 La Lanthanum	72 Hf Hafnium	73 Ta Tantalum	74 W Tungsten	75 Re Rhenium	76 Os Osmium	77 Ir Iridium	78 Pt Platinum	79 Au Gold	80 Hg Mercury	81 Tl Thallium	82 Pb Lead	83 Bi Bismuth	84 Po Polonium	85 At Astatine	86 Rn Radon
87 Fr Francium																	88
																	71 Lu Lutetium
																	103 Lr Lawrencium

PREVIEW

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element in a period is usually an active solid and the last element is always an inactive gas. Atomic size decreases from left to right across a period and atomic mass increases from left to right across a period.

What's in the Box?

Each element has its own box on the Periodic Table. Each box contains the element's name, symbol, atomic number, and atomic mass.



Top number is the atomic number. Every element has its own personal atomic number. The atomic number tells how many protons that element contains.

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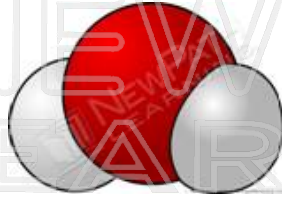
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A **molecule** is the smallest unit of an element and is formed when two or more atoms join together chemically.



Compounds

A **compound** is a molecule that contains two or more different elements. For example, water is made of hydrogen and oxygen atoms, and carbon dioxide is made of carbon and oxygen atoms.



H_2O = two hydrogen atoms and one oxygen atom = water

$1CO_2$ = one carbon atom and 2 oxygen atoms = carbon dioxide

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water is an example of a solution. salt is dissolved in water to make salt water.

A **colloid** is a mixture in which very small particles of one substance are dispersed evenly throughout another substance. The particles are not dissolved.

Solutes, Solvents, and Solubility (try and say that five times fast)

A **solute** is the substance that is dissolved in the solvent. The **solvent** is what dissolves another substance.

Solubility refers to the ability of one substance to dissolve into another substance.

Lesson Checkpoint: Describe a solute and a solvent.