

MINECRAFT & SCIENCE

EXPLORING THE INTERNATIONAL SPACE STATION

VERSION 1.0

Lesson 2

Laboratories

LABORATORIES OF THE ISS

- The ISS has three laboratories
 - Columbus (Europe)
 - Kibo (Japan)
 - Destiny (United States)
- There are more than 150 experiments conducted in these labs
- Experiments help the astronauts learn about topics such as:
 - Climate change on Earth
 - Growing food in microgravity
 - Human bodies act in space
 - New technologies
 - Space Travel

LABORATORIES OF THE ISS



TOUR OF THE COLUMBUS LABORATORY



MINECRAFT CHEMISTRY BLOCKS

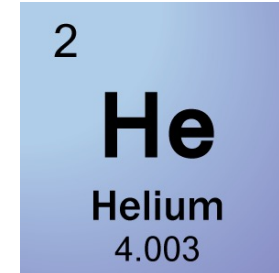
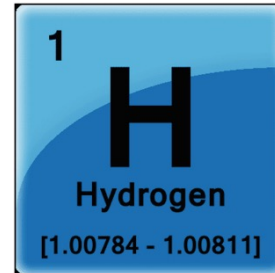
- There are chemistry blocks that are exclusive to MEE
- These will be helpful when building your labs
 - Elements
 - Element Constructor
 - Compound Creator
 - Lab Table
 - Material Reducer



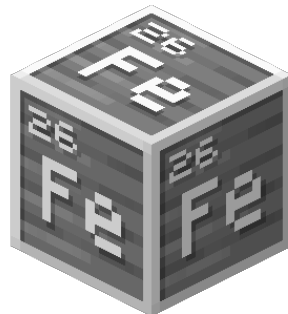
ELEMENTS

- Elements are the know substances found on Earth
- There are different types of elements such as:

- Metals
- Non-Metals
- Gases



- Elements can be found on the Periodic Table of Elements
- In MEE, there are blocks for each element

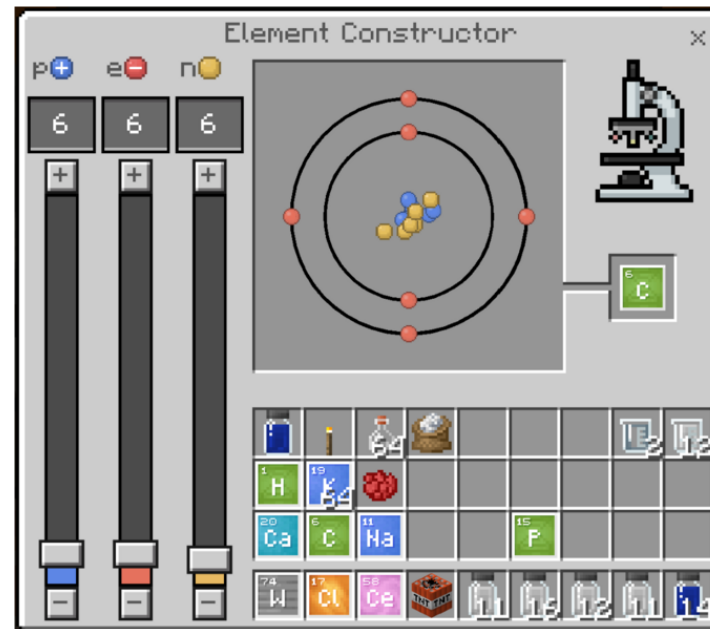


PERIODIC TABLE OF ELEMENTS

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18								
1	1 H Hydrogen 1.008	Atomic Symbol Name Weight		C Solid	Metals								Metalloids	Nonmetals		2 He Helium 4.0026										
2	3 Li Lithium 6.94	4 Be Beryllium 9.0122	Hg Liquid	Alkali earth metals								Transition metals	Post-transition metals	Reactive nonmetals	Noble gases	5 B Boron 10.81	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180					
3	11 Na Sodium 22.990	12 Mg Magnesium 24.305	H Gas	Actinoids																	13 Al Aluminium 26.982	14 Si Silicon 28.085	15 P Phosphorus 30.974	16 S Sulfur 32.06	17 Cl Chlorine 35.45	18 Ar Argon 39.948
4	19 K Potassium 39.098	20 Ca Calcium 40.078	Rf Unknown	21 Sc Scandium 44.956	22 Ti Titanium 47.867	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.630	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.904	36 Kr Krypton 83.798							
5	37 Rb Rubidium 85.468	38 Sr Strontium 87.62		39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.95	43 Tc Technetium (98)	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.91	46 Pd Palladium 106.42	47 Ag Silver 107.87	48 Cd Cadmium 112.41	49 In Indium 114.82	50 Sn Tin 118.71	51 Sb Antimony 121.76	52 Te Tellurium 127.60	53 I Iodine 126.90	54 Xe Xenon 131.29							
6	55 Cs Caesium 132.91	56 Ba Barium 137.33		57-71	72 Hf Hafnium 178.49	73 Ta Tantalum 180.95	74 W Tungsten 183.84	75 Re Rhenium 186.21	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.97	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)							
7	87 Fr Francium (223)	88 Ra Radium (226)		89-103	104 Rf Rutherfordium (267)	105 Db Dubnium (268)	106 Sg Seaborgium (269)	107 Bh Bohrium (270)	108 Hs Hassium (277)	109 Mt Meitnerium (278)	110 Ds Darmstadtium (281)	111 Rg Roentgenium (282)	112 Cn Copernicium (285)	113 Nh Nihonium (286)	114 Fl Flerovium (289)	115 Mc Moscovium (290)	116 Lv Livermorium (293)	117 Ts Tennessine (294)	118 Og Oganesson (294)							
For elements with no stable isotopes, the mass number of the isotope with the longest half-life is in parentheses.																										
	57 La Lanthanum 138.91	58 Ce Cerium 140.12	59 Pr Praseodymium 140.91	60 Nd Neodymium 144.24	61 Pm Promethium (145)	62 Sm Samarium 150.36	63 Eu Europium 151.96	64 Gd Gadolinium 157.25	65 Tb Terbium 158.93	66 Dy Dysprosium 162.50	67 Ho Holmium 164.93	68 Er Erbium 167.26	69 Tm Thulium 168.93	70 Yb Ytterbium 173.05	71 Lu Lutetium 174.97											
	89 Ac Actinium (227)	90 Th Thorium 232.04	91 Pa Protactinium 231.04	92 U Uranium 238.03	93 Np Neptunium (237)	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (266)											

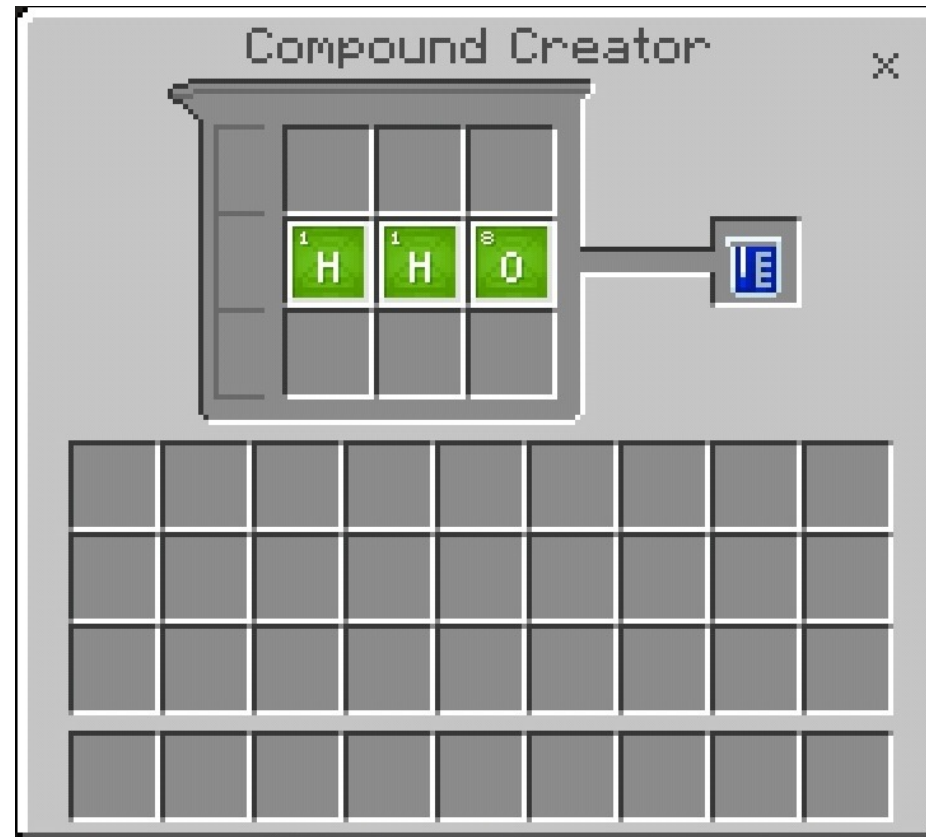
ELEMENT CONSTRUCTOR

- The *Element Constructor* allows players to construct elements.
- This is done by adjusting the number of protons, electrons, neutrons.
- Each element has its own value of these three.
- Right-click on the *Element Constructor* to use it.



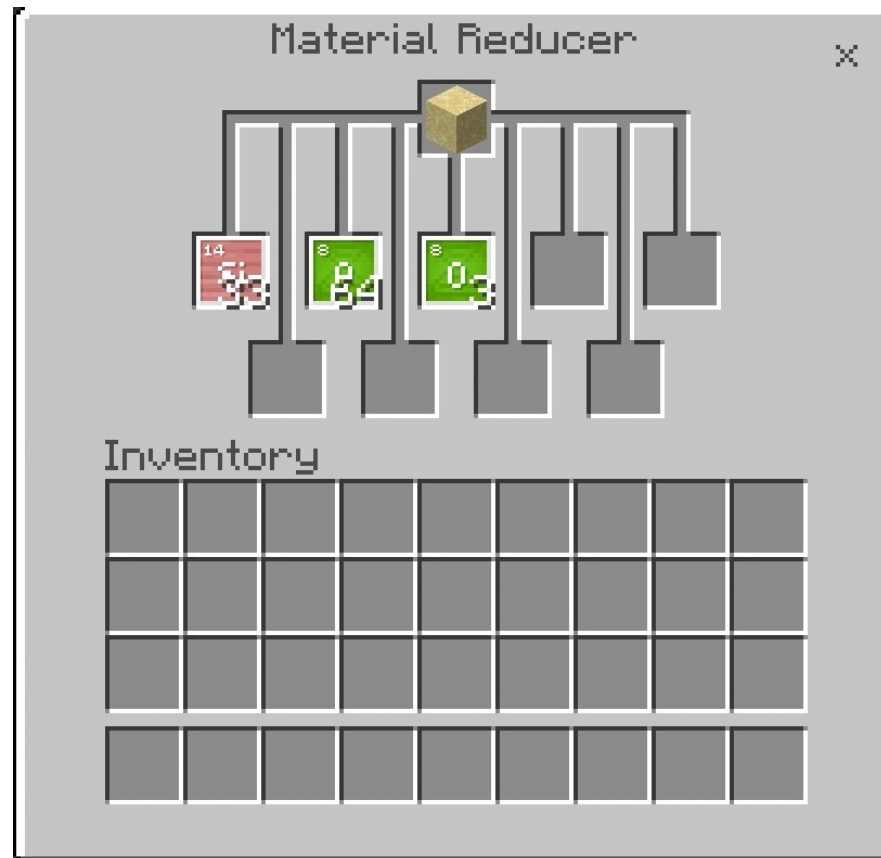
COMPOUND CREATOR

- The *Compound Creator* allows you to combine elements.
- This helps create items that are not normally in the game.
- Right-click on the *Compound Creator* to use it.



MATERIAL REDUCER

- The *Material Reducer* breaks down blocks into elements.
- It will tell you how many of each elements make up the block.
- Right-click the *Material Reducer* to use it.



STUDENT ACTIVITY – LABORATORIES

- Design and build 2 or more laboratories on your space station.
- Pick a theme for each lab to help you decorate.
- Experiments can be from your research or invent your own experiment.



END OF LESSON 2