

# Matter and Density (Unit 5)

Matter is anything that can take up space and be

\_\_\_\_\_. Everything on \_\_\_\_\_ is made of matter.

## States of matter

What states of matter are being shown in each of these examples?



The atoms here

\_\_\_\_\_



The atoms here

move \_\_\_\_\_



The atoms here

move \_\_\_\_\_

## PERIODIC TABLE OF ELEMENTS

Chemical Group Block

|                                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|----------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|---------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-----------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|-------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 1<br>1.008<br>H<br>Hydrogen<br>Non-metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 2<br>4.0026<br>He<br>Helium<br>Noble Gas  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                                |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3<br>6.941<br>Li<br>Lithium<br>Metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 4<br>9.012182<br>Be<br>Beryllium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 5<br>10.81<br>B<br>Boron<br>Metalloid     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 6<br>12.011<br>C<br>Carbon<br>Non-metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 7<br>14.007<br>N<br>Nitrogen<br>Non-metal      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 8<br>15.999<br>O<br>Oxygen<br>Non-metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 9<br>18.9984<br>F<br>Fluorine<br>Non-metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 10<br>20.18<br>Ne<br>Neon<br>Noble Gas      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 11<br>22.990<br>Na<br>Sodium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 12<br>24.305<br>Mg<br>Magnesium<br>Metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 13<br>26.981<br>Al<br>Aluminum<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 14<br>28.086<br>Si<br>Silicon<br>Metalloid |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 15<br>30.973<br>P<br>Phosphorus<br>Non-metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 16<br>32.06<br>S<br>Sulfur<br>Non-metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 17<br>35.45<br>Cl<br>Chlorine<br>Non-metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 18<br>39.948<br>Ar<br>Argon<br>Noble Gas    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                            |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                              |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                             |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 19<br>39.0983<br>K<br>Potassium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 20<br>39.0983<br>Ca<br>Calcium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 21<br>44.9559<br>Sc<br>Scandium<br>Metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 22<br>47.867<br>Ti<br>Titanium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 23<br>50.9415<br>V<br>Vanadium<br>Metal        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 24<br>51.996<br>Cr<br>Chromium<br>Metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 25<br>54.938044<br>Mn<br>Manganese<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 26<br>55.845<br>Fe<br>Iron<br>Metal         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 27<br>58.9326<br>Co<br>Cobalt<br>Metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 28<br>58.933<br>Ni<br>Nickel<br>Metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 29<br>63.546<br>Cu<br>Copper<br>Metal      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 30<br>65.38<br>Zn<br>Zinc<br>Metal           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 31<br>69.723<br>Ga<br>Gallium<br>Metal       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 32<br>72.64<br>Ge<br>Germanium<br>Metalloid |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 33<br>74.921595<br>As<br>Arsenic<br>Metalloid |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 34<br>78.9718<br>Se<br>Selenium<br>Non-metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 35<br>79.904<br>Br<br>Bromine<br>Non-metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 36<br>83.80<br>Kr<br>Krypton<br>Noble Gas |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 37<br>85.4678<br>Rb<br>Rubidium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 38<br>87.62<br>Sr<br>Strontium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 39<br>88.90584<br>Y<br>Yttrium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 40<br>91.224<br>Zr<br>Zirconium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 41<br>92.90638<br>Nb<br>Niobium<br>Metal       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 42<br>95.94<br>Mo<br>Molybdenum<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 43<br>95.94<br>Tc<br>Technetium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 44<br>101.07<br>Ru<br>Ruthenium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 45<br>101.07<br>Rh<br>Rhodium<br>Metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 46<br>101.07<br>Pd<br>Palladium<br>Metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 47<br>106.90558<br>Ag<br>Silver<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 48<br>112.411<br>Cd<br>Cadmium<br>Metal      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 49<br>114.818<br>In<br>Indium<br>Metal       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 50<br>114.818<br>Sn<br>Tin<br>Metal         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 51<br>127.601<br>Sb<br>Antimony<br>Metalloid  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 52<br>127.601<br>Te<br>Tellurium<br>Metalloid |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 53<br>127.601<br>I<br>Iodine<br>Non-metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 54<br>131.29<br>Xe<br>Xenon<br>Noble Gas  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 55<br>132.905<br>Cs<br>Cesium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 56<br>137.327<br>Ba<br>Barium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 57<br>138.905<br>La<br>Lanthanum<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 58<br>140.12<br>Ce<br>Cerium<br>Metal      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 59<br>140.90765<br>Pr<br>Praseodymium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 60<br>144.24<br>Nd<br>Neodymium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 61<br>144.9126<br>Pm<br>Promethium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 62<br>150.36<br>Sm<br>Samarium<br>Metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 63<br>151.964<br>Eu<br>Europium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 64<br>157.25<br>Gd<br>Gadolinium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 65<br>158.925<br>Tb<br>Terbium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 66<br>158.925<br>Dy<br>Dysprosium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 67<br>162.50<br>Ho<br>Holmium<br>Metal       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 68<br>164.93032<br>Er<br>Erbium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 69<br>167.259<br>Tm<br>Thulium<br>Metal       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 70<br>173.04<br>Yb<br>Ytterbium<br>Metal      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 71<br>174.967<br>Lu<br>Lutetium<br>Metal      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 72<br>178.49<br>Hf<br>Hafnium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 73<br>178.49<br>Ta<br>Tantalum<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 74<br>180.947<br>W<br>Tungsten<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 75<br>186.207<br>Re<br>Rhenium<br>Metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 76<br>186.207<br>Os<br>Osmium<br>Metal         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 77<br>190.23<br>Ir<br>Iridium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 78<br>195.08<br>Pt<br>Platinum<br>Metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 79<br>196.967<br>Au<br>Gold<br>Metal        |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 80<br>200.59<br>Hg<br>Mercury<br>Metal     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 81<br>204.38<br>Tl<br>Thallium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 82<br>207.2<br>Pb<br>Lead<br>Metal         |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 83<br>208.98<br>Bi<br>Bismuth<br>Metalloid   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 84<br>208.98<br>Po<br>Polonium<br>Metal      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 85<br>209<br>At<br>Astatine<br>Non-metal    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 86<br>222.0175<br>Rn<br>Radon<br>Noble Gas    |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                               |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 87<br>223.019<br>Fr<br>Francium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 88<br>226.0254<br>Ra<br>Radium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 89<br>227.0337<br>Ac<br>Actinium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 90<br>232.0377<br>Th<br>Thorium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 91<br>231.03628<br>Pa<br>Protactinium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 92<br>238.02891<br>U<br>Uranium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 93<br>237.04392<br>Np<br>Neptunium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 94<br>244.04189<br>Pu<br>Plutonium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 95<br>247.0703<br>Am<br>Americium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 96<br>247.0703<br>Cm<br>Curium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 97<br>247.0703<br>Bk<br>Berkelium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 98<br>251.0764<br>Cf<br>Californium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 99<br>252.0833<br>Es<br>Einsteinium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 100<br>257.10536<br>Fm<br>Fermium<br>Metal  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 101<br>259.1089<br>Md<br>Mendelevium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 102<br>261.10758<br>No<br>Nobelium<br>Metal   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | 103<br>261.10758<br>Lr<br>Lawrencium<br>Metal |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |                                           |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

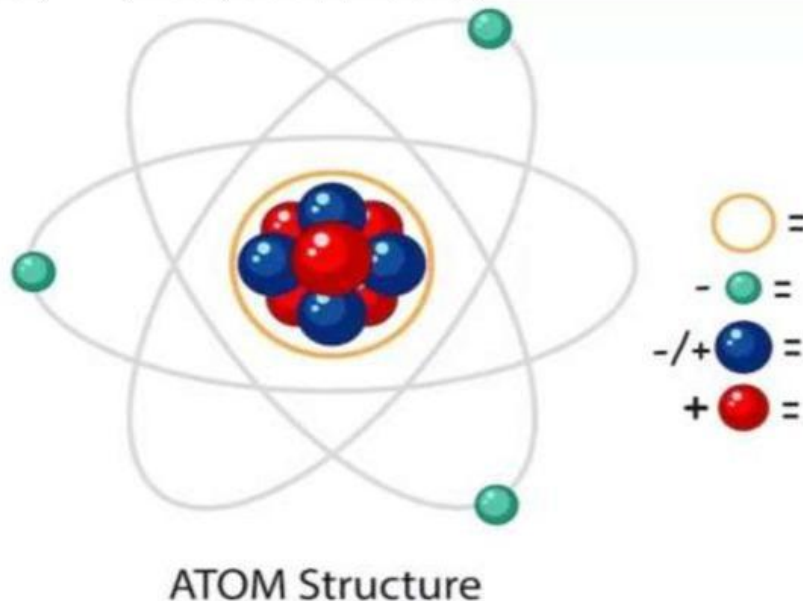
# Elements in the periodic table

*Why is Boron this number in the periodic table?*

Boron is the number \_\_\_\_ because it has \_\_\_\_, \_\_\_\_,  
\_\_\_\_ and \_\_\_\_.

*Why is Copper this number in the periodic table?*

Copper is the number \_\_\_\_ because it has \_\_\_\_, \_\_\_\_,  
\_\_\_\_ and \_\_\_\_.



*Are these materials **natural** or **synthetic**?*





What **properties** do these different materials have?

*\*Some of these may have more than one*



Waterproof  
Synthetic  
Natural  
Soft  
Absorbent  
Rigid  
Transparent  
Opaque  
Hard  
Flexible

**Written question in notebook:**

1. What is the difference between a natural and a synthetic material?
2. Can you provide some examples of each and their origin?

