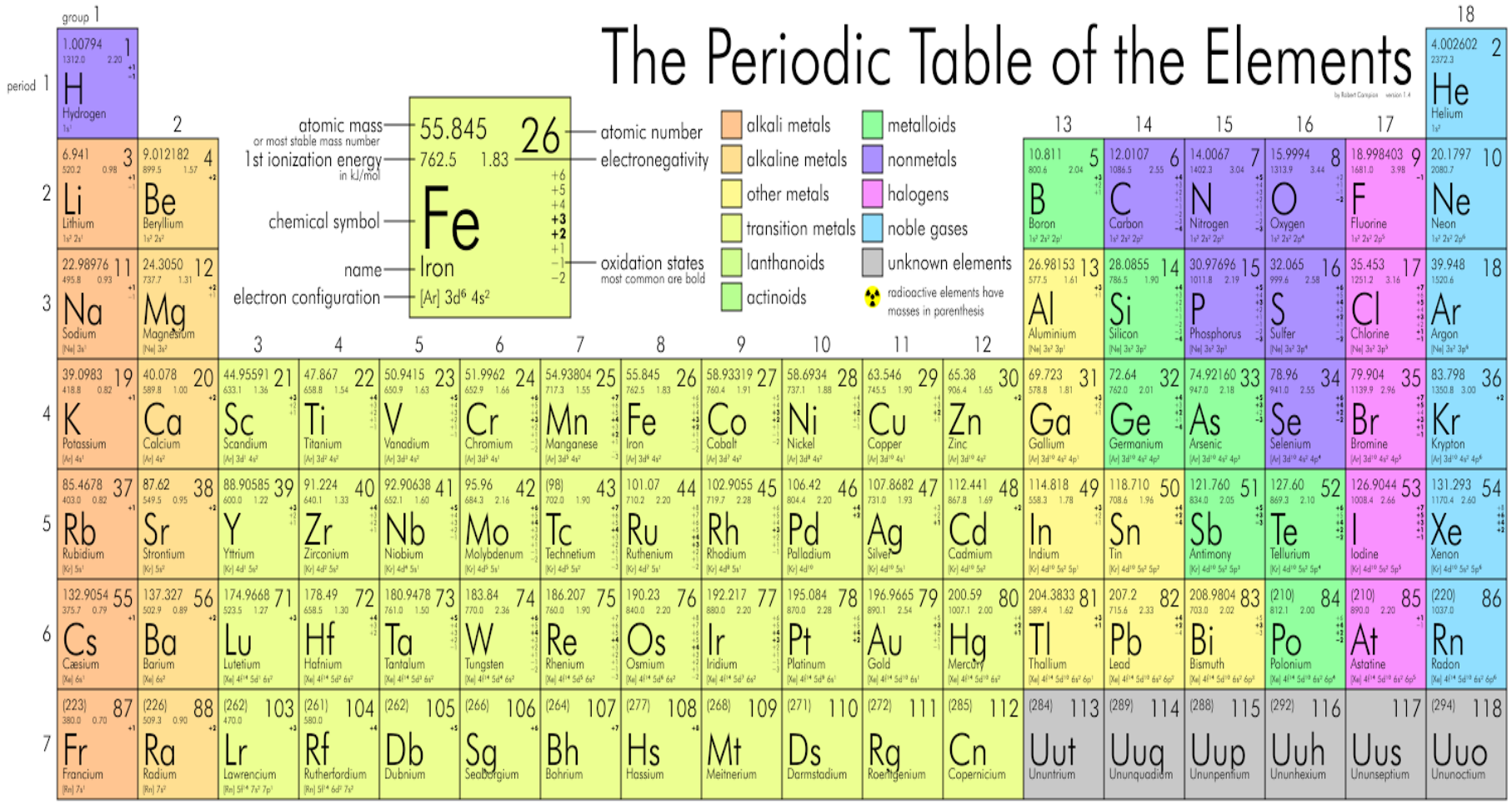
Name: _____

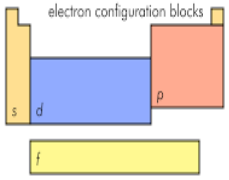
What's in that Mineral?

Minerals are made up of either one or more elements. Below is a list of minerals. Fill out the table below to answer questions about these elements. In the metals column list the elements that fall into the Metals group of the periodic table. Do the same for the Non-Metals column. In the "Use" column name at least one common industrial use for the mineral. Use "minerals.net" and "http://ed.ted.com/periodic-videos" for help.

Mineral	***Chemical Formula***	***Metals***	***Non-Metals***
Olivine	**$(Mg,Fe)_2SiO_4$**	**Magnesium, Iron**	**Silicon, Oxygen**
Quartz			
Azurite			
Barite			
Talc			
Diamond			
Corundum			
Calcite			
Fluorite			
Apatite			
Cuprite			
Topaz			

The Periodic Table of the Elements





notes

- as of yet, elements 113-118 have no official name designated by the IUPAC.
- 1 kJ/mol = 96.485 eV.
- all elements are implied to have an oxidation state of zero.

138.9054 57 1.10 La Lanthanum [Xe] 5d¹ 6s²	140.116 58 1.12 Ce Cerium [Xe] 4f¹ 5d¹ 6s²	140.9076 59 1.13 Pr Praseodymium [Xe] 4f³ 6s²	144.242 60 1.14 Nd Neodynium [Xe] 4f⁴ 6s²	(145) 61 Pm Promethium [Xe] 4f⁵ 6s²	150.36 62 1.17 Sm Samarium [Xe] 4f⁶ 6s²	151.964 63 Eu Europium [Xe] 4f⁷ 6s²	157.25 64 1.20 Gd Gadolinium [Xe] 4f⁷ 5d¹ 6s²	158.9253 65 Tb Terbium [Xe] 4f⁹ 6s²	162.500 66 1.22 Dy Dysprosium [Xe] 4f¹⁰ 6s²	164.9303 67 1.23 Ho Holmium [Xe] 4f¹¹ 6s²	167.259 68 1.24 Er Erbium [Xe] 4f¹² 6s²	168.9342 69 1.25 Tm Thulium [Xe] 4f¹³ 6s²	173.054 70 Yb Ytterbium [Xe] 4f¹⁴ 6s²
(227) 89 1.10 Ac Actinium [Rn] 6d¹ 7s²	232.0380 90 1.30 Th Thorium [Rn] 6d² 7s²	231.0358 91 1.50 Pa Protactinium [Rn] 5f² 6d¹ 7s²	238.0289 92 1.38 U Uranium [Rn] 5f³ 6d¹ 7s²	(237) 93 1.36 Np Neptunium [Rn] 5f⁴ 6d¹ 7s²	(244) 94 1.28 Pu Plutonium [Rn] 5f⁶ 7s²	(243) 95 1.30 Am Americium [Rn] 5f⁷ 7s²	(247) 96 1.30 Cm Curium [Rn] 5f⁷ 6d¹ 7s²	(247) 97 1.30 Bk Berkelium [Rn] 5f⁹ 7s²	(251) 98 1.30 Cf Californium [Rn] 5f¹⁰ 7s²	(252) 99 1.30 Es Einsteinium [Rn] 5f¹¹ 6s²	(257) 100 1.30 Fm Fermium [Rn] 5f¹² 7s²	(258) 101 1.30 Md Mendelevium [Rn] 5f¹³ 7s²	(259) 102 1.30 No Nobelium [Rn] 5f¹⁴ 7s²

Teacher Notes and instructions

- This Google search activity allows students to go to the internet to search for specific minerals and then to use the Periodic Table to discover what the mineral is made out of. This activity usually takes a full 50 minutes for the students to find all of the answers. I usually discuss the answers at the beginning of class on the following day so that they have as much time as needed to find the answers.
- During the discussion, I discuss how cool it is that mankind has been able to use the different elements to its benefit. There are many uses of these minerals that I did not list so be aware that students may have different answers. I discuss that humans have become adept at breaking down minerals into their different chemicals and extracting them. For example, cuprite and chalcopyrite are broken down and then the copper is extracted from it.
- Doing this assignment also allows Earth Science students to use the periodic table to identify minerals that are metals, metalloids or nonmetals.