

Match the person to what they did.

- |                            |   |
|----------------------------|---|
| 1) Georgius Agricola _____ | A) Was an alchemist   |
| 2) Henning Brandt _____    | B) Came with "atomic theory" that everything is made of atoms |
| 3) Neils Bohr _____        | C) Invented the Periodic Table                                |
| 4) Jabir ibn Hayyan _____  | D) Studied mines in Europe                                    |
| 5) John Dalton _____       | E) Discovered the element phosphorus                          |
| 6) Dmitri Mendeleev _____  | F) Proposed the solar system model of the atom                |

- 7) Which one of these substances is NOT on the Periodic Table?  
 a) gold    b) bismuth    c) phosphorus    d) water    e) iron
- 8) When two or more atoms pair up, they form a: a) molecule    b) element    c) ion    d) nucleus
- 9) What determines which element an atom is?  
 a) number of electrons    b) number of protons    c) number of neutrons    d) number of electron shells
- 10) What did alchemists think the philosopher's stone would do, besides turning things into gold?  
 a) make you invisible    b) cure your diseases    c) make you wise    d) give you power and wealth

Can you remember the five rules that decide whether something is a mineral?

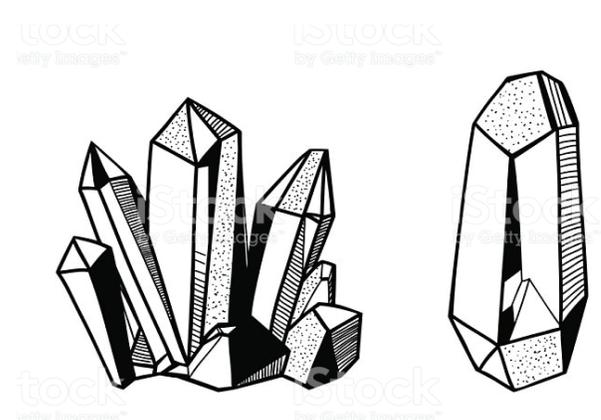
- 11) \_\_\_\_\_  
 12) \_\_\_\_\_  
 13) \_\_\_\_\_  
 14) \_\_\_\_\_  
 15) \_\_\_\_\_

Name two substances that disobey one of these rules and are still included in most mineral books.

- 16) \_\_\_\_\_ and 17) \_\_\_\_\_

Can you match the chemical formula with the name?

- |                           |                         |
|---------------------------|-------------------------|
| 18) $\text{CaCO}_3$ _____ | A) gold                 |
| 19) $\text{FeS}_2$ _____  | B) silver               |
| 20) $\text{SiO}_2$ _____  | C) salt                 |
| 21) $\text{NaCl}$ _____   | D) iron                 |
| 22) $\text{Cu}$ _____     | E) pyrite (fool's gold) |
| 23) $\text{Au}$ _____     | F) calcite              |
| 24) $\text{Fe}$ _____     | G) quartz               |
| 25) $\text{Ag}$ _____     | H) copper               |



Match the mineral with its crystal shape.

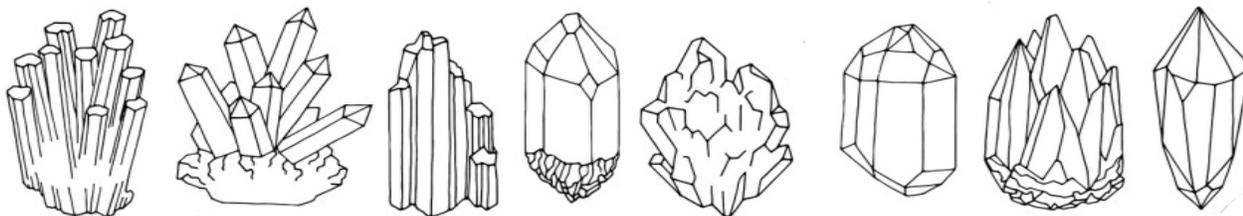
- |                         |                 |
|-------------------------|-----------------|
| 26) halite (salt) _____ | A) hexagon      |
| 27) quartz _____        | B) rhombohedron |
| 28) calcite _____       | C) cube         |

- 29) Which is the softest on the Mohs hardness scale? a) gypsum    b) quartz    c) corundum    d) apatite
- 30) Which one of these is NOT used to help identify a mineral?  
 a) color    b) luster    c) cleavage    d) density    e) size    f) hardness

When magma containing silicon begins to cool, the tetrahedrons form patterns in a certain order. Put the patterns in the correct order.

- 31) First: \_\_\_\_ A) sheets  
 32) Second: \_\_\_\_ B) framework  
 33) Third: \_\_\_\_ C) "stone soup"  
 34) Fourth: \_\_\_\_ D) lines  
 35) Last: \_\_\_\_ E) double lines

- 36) Which of these is an example of a framework mineral? a) mica b) olivine c) asbestos d) quartz  
 37) Which of these is a "stone soup" mineral? a) mica b) olivine c) asbestos d) quartz  
 38) Which contains more iron and magnesium? (HINT: look at color) a) muscovite mica b) biotite mica  
 39) Which has a lot of potassium, K, and sodium, Na? a) feldspar b) quartz c) olivine  
 40) What special property is unique to quartz?  
 a) It has a hexagonal crystal structure. b) Its formula is  $\text{SiO}_2$ . c) It can form sheets. d) It is piezoelectric.

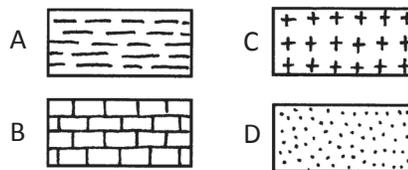


*These crystals are not related to any of the questions. They are just sitting here looking pretty. :)*

- 41) The ocean floor is made mostly of: a) granite b) basalt c) gabbro d) pumice  
 42) Rubies and sapphires are both made of this mineral: a) diamond b) quartz c) corundum d) tourmaline  
 43) TRUE or FALSE? Mafic rocks are darker in color than felsic rocks. \_\_\_\_  
 44) Which of these has a "frothy" texture? a) granite b) obsidian c) pumice  
 45) Which is thin and runny and is less likely to explode out of a volcano? a) mafic lava b) felsic lava  
 46) Slate used to be shale, and shale used to be: a) clay b) silt c) sand d) magma  
 47) What do field geologists use to differentiate clay from silt? a) eyes b) fingers c) tongue d) nose  
 48) Which is softer and easier to carve? a) marble b) granite

49) Which of these patterns represents limestone? \_\_\_\_

50) Which of these pattern represents sandstone? \_\_\_\_



BONUS QUESTIONS: (just a little harder)

- 1) This type of metamorphic rock always has stripes: a) mica schist b) marble c) gneiss d) diorite  
 2) Which one of these is NOT an evaporite? a) gypsum b) travertine c) salt d) coal  
 3) The word "quartz" comes from a German word meaning: a) hard b) clear c) silicon d) hexagon  
 4) Foliated rocks have: a) lots of thin layers b) fossilized leaves c) stripes d) quartz crystals  
 5) TRUE or FALSE? By definition, all clasts are made of silicon-based minerals. \_\_\_\_

**COOKIE MINING****Start-up funds: 19 cents**Land acquisition (purchase of property): \_\_\_\_\_Equipment costs:

# of flat toothpicks \_\_\_\_\_ x 2 cents each = \_\_\_\_\_

# of round toothpicks \_\_\_\_\_ x 4 cents each = \_\_\_\_\_

# of paper clips \_\_\_\_\_ x 6 cents each = \_\_\_\_\_

Labor costs:

Number of minutes \_\_\_\_\_ x 1 cent per minute = \_\_\_\_\_

Reclamation costs: \_\_\_\_\_

2 cents if cookie remains are inside original outline

4 cents if cookie remains go outside original outline

TOTAL MINING COSTS: \_\_\_\_\_

Gross profit:

# of chips \_\_\_\_\_ x 2 cents per chip = \_\_\_\_\_

CALCULATE NET PROFIT:

Start up 19

Gross profit + \_\_\_\_\_

Minus mining costs - \_\_\_\_\_

NET PROFIT: 

Was this a successful mining operation?

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