

STATION 1

1. Identify this specimen
2. What is its classification?
 - a. gypsum
 - b. quartz
 - c. carbonate
 - d. silicate
 - e. halide
3. What is its luster?
 - a. waxy
 - b. metallic
 - c. dull
 - d. vitreous
 - e. pearly
4. What is its hardness?
 - a. 4
 - b. 6
 - c. 2.5 - 3
 - d. 1 - 2
 - e. 8
5. What is its chemical formula?
 - a. CaF_2
 - b. SiO_2
 - c. NaCl
 - d. CaSO_4
 - e. CaCO_3
6. What are common uses for this mineral?
 - a. optic lenses
 - b. iron smelting
 - c. ceramics
 - d. a and c only
 - e. a, b, and c

STATION 2

7. Identify this specimen:
8. What is its classification?
 - a. sulfide
 - b. oxide/hydroxide
 - c. carbonate
 - d. silicate
 - e. phosphate
9. What is its cleavage?
 - a. prismatic
 - b. cubic
 - c. rhombohedral
 - d. octohedral
 - e. none
10. What is its chemical formula?
 - a. $\text{Al}(\text{OH})_3$
 - b. Cu_5FeS_4
 - c. FeS_2
 - d. Fe_2O_3
 - e. $\text{Cu}_2\text{CO}_3(\text{OH})_2$
11. This has the same chemical formula as what mineral?
12. What is its molecular weight?
 - a. 78.00 g/mol
 - b. 119.98 g/mol
 - c. 159.69 g/mol
 - d. 221.11 g/mol
 - e. 501.85 g/mol

STATION 3

13. Identify specimen 5:
14. What is its classification?
- Sedimentary
 - Igneous
 - Metamorphic
15. Around what geologic features is this most likely found?
- volcanoes
 - rivers
 - cliffs
 - glaciers
 - deltas
16. Crystals may grow in this mineral over time. What is this process called?
- devitrification
 - delamination
 - geodization
 - devolution
 - geodelization
17. Identify specimen 18:
18. Where can this rock be found?
- rivers
 - beaches
 - glacial outwash
 - lakes
 - a and d
 - all of the above

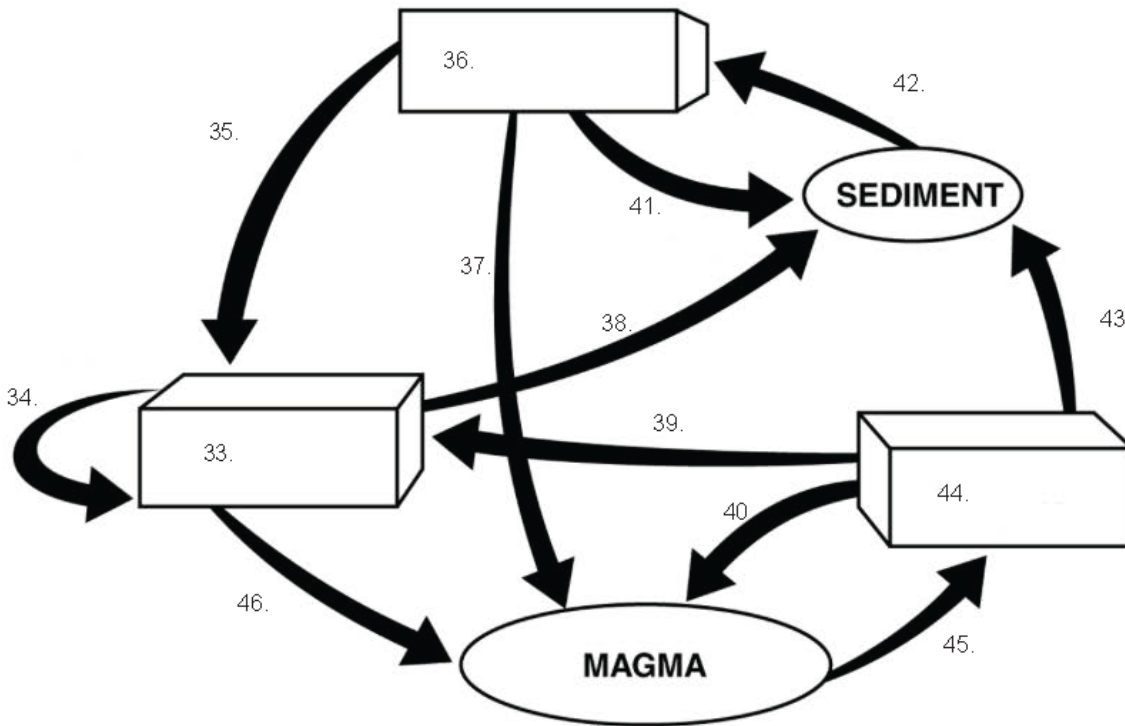
STATION 4

19. Identify this specimen:
20. What is its classification?
- a. native element
 - b. silicate
 - c. gypsum variety
 - d. carbonate
 - e. halide
21. This mineral usually occurs in what type of rock?
- a. sedimentary
 - b. igneous
 - c. metamorphic
22. What is its hardness?
- a. 1
 - b. 2
 - c. 3
 - d. 4
 - e. 5
23. What type of crystal system does it have?
- a. isometric
 - b. hexagonal
 - c. triclinic
 - d. orthorhombic
 - e. tetragonal
24. What is its melting point?

STATION 5

25. Identify this specimen
26. What is its classification?
- a. metamorphic
 - b. sedimentary
 - c. igneous
27. This type of rock was used to build the Castillo de San Marcos in what state?
- a. California
 - b. Texas
 - c. Florida
 - d. Georgia
 - e. Louisiana
28. What is the main mineral that can be found in this rock?
- a. fluorite
 - b. celestite
 - c. dolomite
 - d. halite
 - e. calcite
29. In Bowen's reaction series, the minerals at the top are the last to crystallize
- T or F
30. In Bowen's reaction series, what mineral crystallizes last?
31. What two elements are most prominent in mafic rocks?
32. The name of felsic rocks is a combination of what two words?

STATION 6



For the rock cycle above, identify the types of rocks and processes from the choices below. You may use answers more than once. Please just put the letter in each blank, i.e. you don't have to write out "metamorphic rock", just put "c" in the blank.

- a. Sedimentary Rock
- b. Igneous Rock
- c. Metamorphic Rock
- d. Heat and pressure
- e. Pressure and cementing
- f. Cooling and hardening
- g. Melting
- h. Weathering and erosion

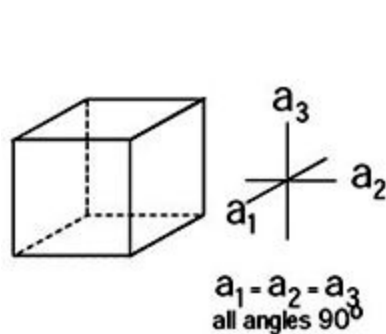
STATION 7

47. Identify this specimen:
48. What is its classification?
- a. carbonate
 - b. gypsum variety
 - c. halide
 - d. quartz variety
 - e. sulfate
49. What is its hardness?
- a. 2
 - b. 3
 - c. 4
 - d. 5
 - e. 6
50. What is its luster?
- a. vitreous
 - b. dull
 - c. silky
 - d. splendent
 - e. transparent
51. What is its chemical formula?

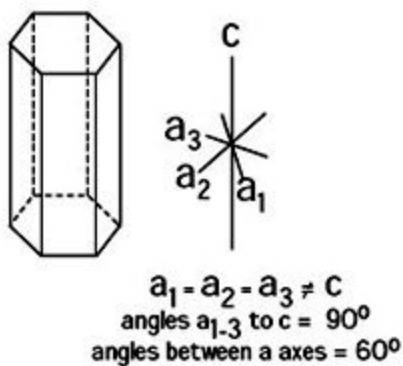
STATION 8

Name the crystal shapes below. Please choose from this list:

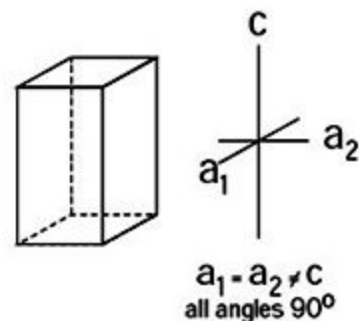
- | | |
|---------------|-----------------|
| a. Monoclinic | d. isometric |
| b. Triclinic | e. hexagonal |
| c. Tetragonal | f. orthorhombic |



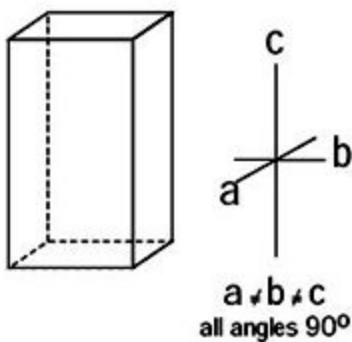
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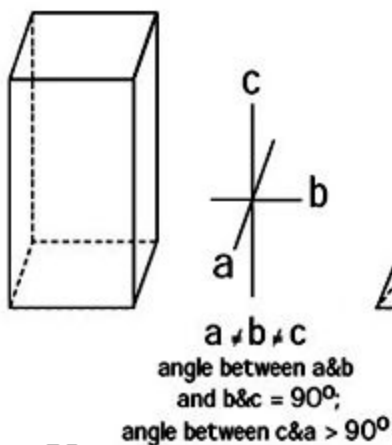
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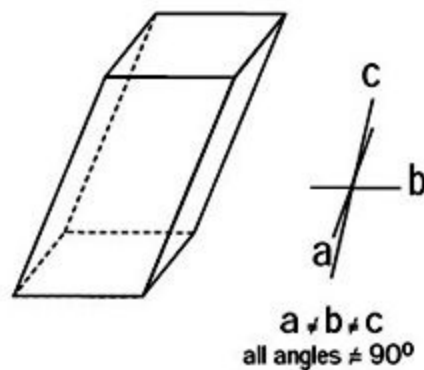
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55.



56.



57.

Choosing from the list below, give 2 examples of minerals with these crystal shapes:

- 58. Isometric
- 59. Orthorhombic
- 60. Monoclinic
- 61. Hexagonal

- Choices:
- | | | | |
|------------|--------------|------------|----------------|
| a. pyrite | b. barite | c. sulfur | d. lepidolite |
| f. citrine | g. opal | h. olivine | e. jasper |
| k. topaz | l. muscovite | m. biotite | i. sodalite |
| | | | j. rose quartz |

STATION 9

62. Identify this specimen
63. This rock consists of sheetlike planar structures. What is the word for this?
- a. stratified
 - b. layered
 - c. planar
 - d. foliated
 - e. striped
64. What is its classification?
- a. metamorphic
 - b. sedimentary
 - c. igneous
65. What is the word for the original rock from which a metamorphic rock is formed?
- a. monolith
 - b. batholith
 - c. phytolith
 - d. granulith
 - e. protolith
66. What is the name for sedimentary rocks that were formed from mechanical weathering debris?
- a. clastic sedimentary
 - b. chemical sedimentary
 - c. felsic sedimentary
 - d. organic sedimentary
 - e. inorganic sedimentary

STATION 10

67. Identify this specimen
68. What is its classification?
- a. silicate
 - b. native element
 - c. oxide/hydroxide
 - d. sulfide
 - e. sulfate
69. What other mineral on the 2018 Official Science Olympiad Rock and Mineral List has the same chemical composition?
- a. hematite
 - b. selenite
 - c. muscovite
 - d. diamond
 - e. galena
70. What is its cleavage?
- a. none
 - b. perfect in one direction
 - c. perfect in two directions
 - d. perfect in three directions
71. What is its specific gravity?
- a. 1.2
 - b. 1.6
 - c. 2.0
 - d. 2.2
 - e. 3.0

STATION 11

72. Identify this specimen

73. What is its classification?

- a. metamorphic
- b. sedimentary
- c. igneous
- d. silicates
- e. carbonates

74. What is the average specific gravity of this rock or mineral?

- a. 1.5 – 1.7
- b. 2.2 – 2.4
- c. 2.6 – 2.8
- d. 3.0- 3.2
- e. 3.4 – 3.6

75. What mineral is the main ore of copper?

- a. rhodonite
- b. chalcopyrite
- c. malachite
- d. bornite
- e. lepidolite

76. Rank the types of coal from lowest to highest carbon content:

- a. lignite
- b. anthracite
- c. bituminous

STATION 12

77. You find a rock with small crystals. Did this rock cool relatively slowly or quickly?

78. Was this rock formed below or at/above the Earth's surface?

79. If an igneous rock cools so quickly that no crystals form, what kind of texture does it have?

- a. phaneritic
- b. aphanitic
- c. hyaline
- d. pegmatitic
- e. porphyritic

80. The textures of metamorphic rock are _____ and _____.

81. The chemical and physical breakdown of a rock is known as _____.

82. The transport of broken down rock is known as _____.

83. Put these minerals in order of grade of metamorphism from lowest to highest:

- a. phyllite
- b. schist
- c. gneiss
- d. slate

84. The word "pyrite" comes from a Greek word meaning:

- a. gold
- b. imposter
- c. shiny
- d. fire
- e. yellow

STATION 13

85. Identify this specimen

86. What is its classification?

- a. silicate
- b. quartz variety
- c. carbonate
- d. halide
- e. garnet group

87. Which of these are varieties of this mineral?

- a. aquamarine
- b. goshenite
- c. peridot
- d. a and b
- e. all of the above

88. What shape of crystals does it have?

- a. isometric
- b. tetragonal
- c. monoclinic
- d. orthorhombic
- e. hexagonal

89. What is its melting point? (points will be given if it's within 5 degrees C)

90. What is its chemical formula?



STATION 14

Name these specimens and their classifications

STATION 15 (TIE BREAKER)

Name the 8 most abundant minerals in the earth's crust. Bonus points if they're in the correct order of abundance by weight, from highest to lowest.