

Rocks and Minerals B Key

Science Olympiad North Regional Tournament at the
University of Florida



Station 1

1. Answer: Azurite
2. Answer: $\text{Cu}_3(\text{CO}_3)_2(\text{OH})_2$
3. What element gives this mineral its color?
Answer: Copper (Cu)
4. What is the crystal structure of this mineral?
Answer: Monoclinic

Station 2

1. Identify this specimen
Answer: Almandine
2. What is the chemical formula?
Answer: $\text{Fe}_3\text{Al}_2\text{Si}_3\text{O}_{12}$
3. To what class of minerals does this specimen belong to?
Answer: Garnet Group
4. What best describes this specimen's cleavage?
Answer: None/May exhibit parting

Station 3

1. Identify this specimen

Answer: Malachite

2. Write the chemical formula

Answer: $\text{Cu}_2\text{CO}_3(\text{OH})_2$

3. What is the fracture of this specimen?

Answer: Splintery

4. What is the transparency of this specimen?

Answer: Opaque

Station 4

1. Identify the specimen

Answer: Barite

2. Write the chemical formula

Answer: BaSO_4

3. Of the following, which is considered the least helpful in identifying minerals?

Answer: B color

4. What is this mineral used for?

Answer: B. Used with mud for oil well drilling

Station 5

1. Identify the specimen
Answer: Mica Schist
2. How is this rock textured?
Answer: C.foliated on cm scale
3. What is the grain size on this rock?
Answer: Fine to medium grained
4. True or false this rock would be good material for an aquifer because it is not very porous
Answer: False, Schist rock has low porosity
5. Classify this specimen as Igneous, Metamorphic, or Sedimentary
Answer: Metamorphic

Station 6

1. Identify this specimen
Answer: Gabbro
2. Color of this rock?
Answer: D. Dark Grey-Black
3. What is the classification of the rock, Igneous, Metamorphic, Sedimentary.
Answer: Igneous
4. Based on the previous question determine whether this rock can be classified on the Bowen's Reaction Series and what classification it would get. (Mafic or Felsic)
Answer: Yes, Mafic

Station 7

1. Identify this specimen
Answer: Breccia

2. How is this rock textured?

Answer: C. Clastic (Coarse-Grained)

3. Classify this rock as Igneous, Sedimentary, Metamorphic

Answer: Sedimentary

4. Which of the following is a way this rock can be formed?

Answer: D. Hydrothermal breccias are formed when hydrothermal fluid fractures a rock mass

Station 8

1. Identify the specimen

Answer: Gneiss

2. Which of the following is at least 1 mineral that this rock encompasses?

Answer: B. Quartz

3. What is the grain size of this rock?

Medium to coarse grained --- Answer

4. What is the classification of this rock: Sedimentary, Metamorphic, Igneous

Answer: Metamorphic

Station 9

Tiebreaker

Identify each specimen and describe its luster

(Be specific and use terms such as silky, vitreous, earthy, metallic)

Specimen 1 – Beryl, Vitreous

Specimen 2 – Olivine, Vitreous

Specimen 3 – Pyrite, Metallic

Specimen 4 – Sodalite, Greasy waxy

Specimen 5 – Chalcedony, Vitreous

Specimen 6 – Biotite Mica, Pearly

Specimen 7 – Malachite, Silky

Specimen 8 – Amethyst, Vitreous

Specimen 9 – Graphite, Metallic

Specimen 10 – Fluorite, Vitreous

Specimen 11 – Agate, Vitreous

Specimen 12 - Bornite, Metallic

Specimen 13 – Hematite, Metallic

Specimen 14 – Copper, Metallic

Specimen 15 - Topaz, Vitreous

Station 10

Rank the following specimens in decreasing hardness from 1-6 (1 being the hardest, 6 being the softest). You will be given a penny.

Specimen 1 (Graphite) 6

Specimen 2 (Fluorite) 3

Specimen 3 (Galena) 5

Specimen 4 (Augite) 2

Specimen 5 (Orthoclase) 1

Specimen 6 (Biotite) 4