

2012
NYS Regional Science Olympiad - Division C
Rocks and Minerals
List of Samples

Each station includes one or more samples that should be labeled as indicated. Provide glass plate, copper penny, streak plate as necessary. You may want to include a magnifier at the rock stations. Feel free to substitute samples, but review the questions and modify if needed.

STATION 1 (Mineral Identification & Uses)

- A. Gypsum (alabaster)
- B. Orthoclase feldspar
- C. Quartz crystal
- D. Graphite

STATION 2 (Mineral Luster)

Pick samples that clearly illustrate each luster. You may substitute different minerals as necessary.

- A. talc (pearly)
- B. kaolinite (earthy)
- C. satin spar gypsum (silky)
- D. pyrite (metallic)
- E. quartz (vitreous)
- F. magnetite (submetallic)

STATION 3 (Rock Classification)

- | | |
|----------------------|-----------------|
| 15. Fossil Limestone | 18 Conglomerate |
| 16 Gneiss | 19 Scoria |
| 17 Granite | |

STATION 4 (Ore Minerals) (STREAK PLATE)

- A. Bauxite
- B. Chalcopyrite
- C. Sphalerite

STATION 5 Density

- A. Magnetite
- B. Celestite
- C. Galena
- D. Gypsum

STATION 6 (Rock forming Minerals & Bowens Reaction Series)

Materials: glass plate, streak plate

- A. Olivine
- B. Quartz
- C. Albite feldspar
- D. Hornblende

STATION 7 (Mineral ID & composition)

MATERIALS: GLASS, STREAK PLATE, COPPER.

- A. Hematite
- B. Magnetite

STATION 8 (Igneous rock composition)

- A. Diorite
- B. Gabbro
- C. Granite

STATION 9 (Igneous Rock Texture & environment)

- A. Pegmatite or very coarse Granite
- B. Pumice
- C. Rhyolite
- D. Obsidian

STATION 10 (Metamorphic Rock texture)

- A. Garnet Schist
- B. Quartzite

STATION 11 (Igneous Rock composition & origin)

- A. Basalt
- B. Scoria
- C. Andesite

STATION 12 (Mineral ID & properties)

Select samples that are transparent with good cleavage.

- A. Halite
- B. Calcite

STATION 13 (Hardness)

MATERIALS: GLASS, STREAK PLATE, COPPER. Don't use your best specimens since students will be testing the minerals by scratching them against each other, etc.

- A. Apatite
- B. Corundum
- C. Calcite
- D. Talc

STATION 14 (Varieties of Quartz)

MATERIALS: GLASS, STREAK PLATE, COPPER PENNY

- A. Citrine
- B. Amethyst
- C. Chalcedony

STATION 15 (structure of minerals)

- A. Muscovite
- B. Biotite

STATION 16 (Mineral identification & composition)

- A. Copper
- B. Bornite
- C. Malachite

STATION 17 (Metamorphic processes)

- A. Mica Schist
- B. Slate
- C. Gneiss
- D. Phyllite

STATION 18 (Limestones)

- A. Chalk
- B. Fossil Limestone
- C. Coquina
- D. Bituminous Coal

STATION 19 (Clastic Sedimentary Rocks)

- A. Shale
- B. Sandstone
- C. Arkose
- D. Conglomerate

STATION 20

MATERIALS: GLASS, STREAK PLATE, COPPER PENNY

- A. Garnet
- B. Tourmaline

TEAM NUMBER _____

SCHOOL _____ KEY _____

SCORE **116** RANK _____

2012 NYS Regional Science Olympiad C-Division

Rocks & Minerals

ANSWER SHEET

Station 1 (8 pts)

Mineral Name	Use
1. Sample A GYPSUM	2. <u> B </u>
3. Sample B ORTHOCLASE FELDSPAR	4. <u> D </u>
5. Sample C QUARTZ	6. <u> A </u>
7. Sample D GRAPHITE	8. <u> C </u>

Station 2 (6 pts)

- 9. Sample A: pearly
- 10. Sample B: earthy
- 11. Sample C: silky
- 12. Sample D: metallic
- 13. Sample E: vitreous
- 14. Sample F: submetallic

14 pts

Station 3 (Rock Classification) (10 pts)

Sample	Rock Type	Characteristic
15. Rock A	SEDIMENTARY	FOSSILS
16. Rock B	METAMORPHIC	FOLIATED; BANDED
17. Rock C	IGNEOUS	INTERGROWN CRYSTALS
18. Rock D	SEDIMENTARY	ROCK FRAGMENTS; CLASTIC
19. Rock E	IGNEOUS	VESICULAR; HOLES; FROTHY

Station 4: (6 pts)

Mineral Name	Element
20. Mineral A: BAUXITE	ALUMINUM
21. Mineral B: CHALCOPYRITE/BORNITE	COPPER
22. Mineral C: SPHALERITE	ZINC

Station 5 (5 pts)

23. D B A C
 Lowest Specific Gravity Highest Specific Gravity

24. CELESTITE

25. B

26. MAGNETITE

27. D

21 pts

Station 6 (5 pts)

28. ____ OLIVINE ____

29. ____ ALBITE ____

30. ____ C ____

31. ____ A ____

32. ____ A ____

Station 7 (5 pts)

33. HEMATITE

34. MAGNETITE

35. ____ D ____

36. ____ B ____

37. ____ A ____

Station 8 (6 pts)

38. ____ C ____ A ____ B ____
Felsic Mafic

39. DIORITE

40. GABBRO

41. ____ A ____

42. ____ B ____

43. ____ A ____

Station 9 (6 pts)

44. ROCK A PEGMATITE (GRANITE)

45. ROCK B PUMICE

46. ROCK C RHYOLITE

47. ROCK D OBSIDIAN

48. ____ A ____

49. ____ C ____

Station 10 (5 pts)

50. ____ A ____

51. ____ C ____

52. ____ D ____

53. ____ C ____

54. ____ D ____

Station 11 (5 pts)

55. ____ BASALT ____

56. ____ SCORIA ____

57. ____ A ____

58. ____ D ____

59. ____ A ____

32 pts

Station 12 (5 pts)

60. HALITE

61. CALCITE

62. ____B____

63. ____C____

64. ____A____

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Station 13 (6 pts)

65. D C A B
Softest Hardest

66. ____D____

67. ____B____

68. ____A____

69. ____C____

70. ____B____

Station 14 (5 pts)

71. Sample A: CITRINE

72. Sample C: CHALCEDONY

73. ____A____

74. ____B____

75. ____C____

Station 15 (5 pts)

76. Sample A: MUSCOVITE

77. Sample B: BIOTITE

78. ____1____

79. ____C____

80. ____A____

Station 16 (5 pts)

81. Sample A: COPPER

82. Sample B: Bornite/Chalcopyrite

83. Sample C: MALACHITE

84. ____D____

85. ____A____

Station 17 (5 pts)

86. ____D____

87. ____B____

88. B D A C
Lowest grade Highest Grade

89. Rock B SLATE

90. Rock C GNEISS

31 pts

Team # KEY

Station 18 (6 pts)

91. ROCK A: CHALK

92. B

93. ROCK B: FOSSIL LIMESTONE

94. A

95. C

96. D

Station 19 (5 pts)

97. SAMPLE A SHALE

98. SAMPLE B SANDSTONE

99. SAMPLE D CONGLOMERATE

100. D

101. D

102. A

Station 20 (6 pts)

103. GARNET

104. C

105. TOURMALINE

106. B

107. A

108. A

18 pts