

Student: _____

- Oxygen, silicon and aluminum are the three most abundant chemical elements within earth's crust. Why, then is aluminum recycled?
 - To reduce the consumption of electrical energy relative to that which is needed to extract aluminum from ore
 - Because aluminum is a precious metal
 - Even though aluminum is abundant in the crust, most of it is within seafloor crust and consequently difficult to obtain
 - All of these reasons are true.
- The minimum concentration factor necessary for profitable mining of an ore deposit depends on each of the following except
 - The metal's average concentration in a deposit.
 - The price of the metal being recovered.
 - The mineral in which the metal of interest occurs.
 - How the metal will be used once it is extracted from ore.
- A rock or mineral from which a useful or metal can be extracted is referred to as a(an)
 - Metal.
 - Sub-metallic.
 - Ore.
 - Economic mineral.
- An felsic igneous rock with very large crystals, often enriched in rarer elements is
 - Granitic pegmatite.
 - Porphyry.
 - Kimberlite.
 - Peridotite.
- An igneous rock from which larger, gem-quality diamonds may be mined is
 - Basalt.
 - Rhyolite.
 - Kimberlite.
 - Andesite.
- What rock or mineral resource is used in the greatest quantity?
 - Aluminum
 - Copper
 - Silicon, for silicon chips
 - Crushed rock, sand and gravel
- Dense minerals, like magnetite and native gold, may be concentrated in a crystallizing magma chamber by
 - Fluids.
 - Gravity.
 - Gases.
 - Porosity.
- Sedimentary iron ores that are layered are called
 - Banded hematite quartzite.
 - Banded iron quartzite.
 - Banded iron formation.
 - Banded metallic formation.

9. Evaporite deposits are examples of
 - A. Igneous mineral deposits.
 - B. Sedimentary mineral deposits.
 - C. Metamorphic mineral deposits.
 - D. None of the choices are correct.

10. Sediment sorting and selective concentration of minerals via currents in a coastal environment that are mechanically concentrated by water are called
 - A. Hydrothermal deposits.
 - B. Ore deposits.
 - C. Placer deposits.
 - D. Metasomatic deposits.

11. Hydrothermal ore deposits
 - A. Are formed by deposition of dissolved minerals from hot fluids.
 - B. Are found only at seafloor spreading ridges.
 - C. Produce only a few kinds of valuable ores, mostly of precious metals.
 - D. All of the choices are correct.

12. Ore deposits of dense minerals concentrated by stream action are
 - A. Evaporates.
 - B. Placers.
 - C. Hydrothermal.
 - D. Metamorphic.

13. Weathering in tropical climates can produce residual ores rich in
 - A. Calcite and quartz.
 - B. Feldspar and mica.
 - C. Sulfur and sulfide ores.
 - D. Iron and aluminum.

14. All of the following are commonly mined from sulfide ores except
 - A. Copper.
 - B. Aluminum.
 - C. Lead.
 - D. Zinc.

15. All of the following are mined from evaporite deposits except
 - A. Halite.
 - B. Gypsum.
 - C. Phosphates.
 - D. Quartz.

16. Which of these are metallic and also serve as ore minerals
 - A. Pyrite.
 - B. Galena.
 - C. Magnetite.
 - D. Hematite.
 - E. All the choices are correct.

17. Reserves, by definition, must be all of the following except
 - A. Identified ore deposits.
 - B. Exploitable with current technology.
 - C. Economically profitable to mine at present.
 - D. All rock types that are likely to host as yet undiscovered ore.

18. Of which of the following does the United States have the best supply of reserves, relative to demand?
- A. Iron
 - B. Aluminum
 - C. Platinum
 - D. Zinc
19. If demand forces metal prices up, all of the following can be expected except
- A. Development of lower-grade ore deposits.
 - B. Significant rapid increases in total world metal resources.
 - C. Disturbance of more land area for mineral extraction.
 - D. Reclassification of some resources as reserves.
20. Conflict diamonds.
- A. Are those mined in countries as a principal source of revenue for weapons for use by rebels in opposition to sitting governments
 - B. Are those that display two different colors depending on the direction in which they are viewed
 - C. Are those that represent the primary assets of a country that are surrendered to the victor in a war between nations
 - D. Are those that have a substantially reduced hardness in one crystal direction in comparison to other crystal directions
21. The United States has no reserves of
- A. Iron ore, lead and copper.
 - B. Chromium, cobalt, manganese and nickel.
 - C. Tin, bauxite and potash.
 - D. Gold.
22. In a lifetime, an average American citizen will consume _____ pounds of mineral and fuel resources.
- A. 3.5 million
 - B. 450,000
 - C. 55,000
 - D. 6,500
23. Geochemical prospecting involves analyzing all of the following except
- A. Soil.
 - B. Plants.
 - C. Soil gases.
 - D. Fish.
24. New methods in mineral exploration include
- A. Geophysical techniques.
 - B. Geochemical prospecting.
 - C. Remote sensing.
 - D. All the choices are correct.
25. Gold is not now being extracted from seawater. What is the primary reason for it not being extracted?
- A. It would be too disruptive to marine life to develop any marine mineral resources.
 - B. There is no gold in seawater.
 - C. We don't know how to extract minerals from seawater.
 - D. It would be too costly and difficult to separate the small amount of gold from the very large amounts of halite and other minerals.
26. Quarrying is a variety of
- A. Strip mining.
 - B. Surface mining.
 - C. Underground mining.
 - D. Heap leaching.

27. Abandoned quarries
- A. Can be left without reclamation, as their contents are not reactive.
 - B. Are useful as hazardous waste disposal sites.
- CIIf possible, provide alternative uses post mining. The Butchart Gardens in Victoria, B.C., Canada, a . beautiful collection of flower gardens, for example, was once a rock quarry.
- D. Should be filled with water and used for boating and swimming.
28. All of the following are extensively recycled except
- A. Platinum.
 - B. Copper.
 - C. Manganese.
 - D. Lead.
29. Which of the following would be least readily recycled?
- A. Copper pipes
 - B. Aluminum beverage cans
 - C. Lead from car batteries
 - D. Chromium from stainless steel fixtures
30. Spoil banks and tailings piles
- A. Typically weather very rapidly.
 - B. Are unsightly but not hazardous.
 - C. Can be eliminated by putting them back into the underground mines from which they came.
 - D. All of the choices are correct.
31. The concentration factor of an ore is a measure of its enrichment in a metal of interest, relative to average crustal rock.
True False
32. The consumption of resources in the United States matchest their production.
True False
33. Most major iron ore deposits are hydrothermal deposits formed early in the earth's history.
True False
34. Whether a given ore deposit is economic depends on the metal concentration, not on the mineral in which that metal occurs.
True False
35. Sulfide ore deposits are rare because they formed early in the earth's history, before there was very much oxygen in the atmosphere.
True False
36. There are sulfide ores being deposited now at spreading ridges.
True False
37. In the United States, we use many times greater amounts of rock resources, like sand and gravel, than we do of metals like iron and copper.
True False
38. If demand could be held constant at 2002 levels, many world mineral reserves would still be depleted within decades.
True False
39. The United States imports some minerals of which it has ample supplies and production exceeding current demands.
True False

40. When metal prices rise sharply, this spurs immediate development of new mines, which then begin production in a year or two.
True False
41. Limestone is the source for Portland cement, the principal binder for concrete on which the construction industry depends.
True False
42. We have probably already found most of the "easy ores" in accessible parts of the world.
True False
43. The link between plate tectonics and formation of mineral deposits has made the search for new ores more efficient.
True False
44. Producing new minerals by refining new ores and mining is more energy efficient than recycling.
True False
45. A problem with substituting plastics for metals, to conserve the metals is that many plastics are made from our limited supply of oil.
True False
46. Recycling of steel is relatively difficult because alloys of specific composition may be required for specific applications.
True False
47. Wallboard (Sheetrock) is made from gypsum.
True False
48. Some materials such as road salt and phosphorous and potash in fertilizers cannot be recovered.
True False
49. Underground mines do not cause disturbance of the land surface except at the mine entrance, either during or after mining.
True False
50. U.S. stockpiling of strategically important minerals may, in the near term, require the country to increase some mineral imports.
True False
51. The success of mine reclamation is often heavily dependent on availability of water.
True False
52. Underground mining is the most hazardous occupation in the United States.
True False

13 Key

1. Oxygen, silicon and aluminum are the three most abundant chemical elements within earth's crust. Why, then is aluminum recycled?
- A.** To reduce the consumption of electrical energy relative to that which is needed to extract aluminum from ore
 - B. Because aluminum is a precious metal
 - C. Even though aluminum is abundant in the crust, most of it is within seafloor crust and consequently difficult to obtain
 - D. All of these reasons are true.

Montgomery - Chapter 13 #1

2. The minimum concentration factor necessary for profitable mining of an ore deposit depends on each of the following except
- A. The metal's average concentration in a deposit.
 - B. The price of the metal being recovered.
 - C. The mineral in which the metal of interest occurs.
 - D.** How the metal will be used once it is extracted from ore.

Montgomery - Chapter 13 #2

3. A rock or mineral from which a useful or metal can be extracted is referred to as a(an)
- A. Metal.
 - B. Sub-metallic.
 - C.** Ore.
 - D. Economic mineral.

Montgomery - Chapter 13 #3

4. An felsic igneous rock with very large crystals, often enriched in rarer elements is
- A.** Granitic pegmatite.
 - B. Porphyry.
 - C. Kimberlite.
 - D. Peridotite.

Montgomery - Chapter 13 #4

5. An igneous rock from which larger, gem-quality diamonds may be mined is
- A. Basalt.
 - B. Rhyolite.
 - C.** Kimberlite.
 - D. Andesite.

Montgomery - Chapter 13 #5

6. What rock or mineral resource is used in the greatest quantity?
- A. Aluminum
 - B. Copper
 - C. Silicon, for silicon chips
 - D.** Crushed rock, sand and gravel

Montgomery - Chapter 13 #6

7. Dense minerals, like magnetite and native gold, may be concentrated in a crystallizing magma chamber by
- A. Fluids.
 - B.** Gravity.
 - C. Gases.
 - D. Porosity.

Montgomery - Chapter 13 #7

8. Sedimentary iron ores that are layered are called
- A. Banded hematite quartzite.
 - B. Banded iron quartzite.
 - C. Banded iron formation.**
 - D. Banded metallic formation.

Montgomery - Chapter 13 #8

9. Evaporite deposits are examples of
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Montgomery - Chapter 13 #9

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Montgomery - Chapter 13 #10

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Montgomery - Chapter 13 #11

12. Ore deposits of dense minerals concentrated by stream action are
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Montgomery - Chapter 13 #12

13. Weathering in tropical climates can produce residual ores rich in
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 - B. Feldspar and mica.
 - C. Sulfur and sulfide ores.
 - D. Iron and aluminum.**

Montgomery - Chapter 13 #13

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Montgomery - Chapter 13 #14

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Montgomery - Chapter 13 #15

16. Which of these are metallic and also serve as ore minerals
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 - C. Magnetite.
 - D. Hematite.
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Montgomery - Chapter 13 #16

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 - D.** All rock types that are likely to host as yet undiscovered ore.

Montgomery - Chapter 13 #17

18. Of which of the following does the United States have the best supply of reserves, relative to demand?
- A.** Iron
 - B. Aluminum
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Montgomery - Chapter 13 #18

19. If demand forces metal prices up, all of the following can be expected except
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Montgomery - Chapter 13 #19

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 - B. Are those that display two different colors depending on the direction in which they are viewed
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Montgomery - Chapter 13 #20

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 - C. Tin, bauxite and potash.
 - D. Gold.

Montgomery - Chapter 13 #21

22. In a lifetime, an average American citizen will consume _____ pounds of mineral and fuel resources.
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 - B. 450,000
 - C. 55,000
 - D. 6,500

Montgomery - Chapter 13 #22

23. Geochemical prospecting involves analyzing all of the following except
- A. Soil.
 - B. Plants.
 - C. Soil gases.
 - D.** Fish.

Montgomery - Chapter 13 #23

24. New methods in mineral exploration include
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 - B. Geochemical prospecting.
 - C. Remote sensing.
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Montgomery - Chapter 13 #24

25. Gold is not now being extracted from seawater. What is the primary reason for it not being extracted?
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 - C. We don't know how to extract minerals from seawater.
 - D.** It would be too costly and difficult to separate the small amount of gold from the very large amounts of halite and other minerals.

Montgomery - Chapter 13 #25

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 - C. Underground mining.
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Montgomery - Chapter 13 #26

27. Abandoned quarries
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Montgomery - Chapter 13 #27

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Montgomery - Chapter 13 #28

29. Which of the following would be least readily recycled?
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Montgomery - Chapter 13 #29

30. Spoil banks and tailings piles
- A.** Typically weather very rapidly.
 - B. Are unsightly but not hazardous.
 - C. Can be eliminated by putting them back into the underground mines from which they came.
 - D. All of the choices are correct.

Montgomery - Chapter 13 #30

31. The concentration factor of an ore is a measure of its enrichment in a metal of interest, relative to average crustal rock.
- TRUE**

Montgomery - Chapter 13 #31

32. The consumption of resources in the United States matchest their production.
- FALSE**

Montgomery - Chapter 13 #32

33. Most major iron ore deposits are hydrothermal deposits formed early in the earth's history.
FALSE
- Montgomery - Chapter 13 #33*
34. Whether a given ore deposit is economic depends on the metal concentration, not on the mineral in which that metal occurs.
FALSE
- Montgomery - Chapter 13 #34*
35. Sulfide ore deposits are rare because they formed early in the earth's history, before there was very much oxygen in the atmosphere.
FALSE
- Montgomery - Chapter 13 #35*
36. There are sulfide ores being deposited now at spreading ridges.
TRUE
- Montgomery - Chapter 13 #36*
37. In the United States, we use many times greater amounts of rock resources, like sand and gravel, than we do of metals like iron and copper.
TRUE
- Montgomery - Chapter 13 #37*
38. If demand could be held constant at 2002 levels, many world mineral reserves would still be depleted within decades.
TRUE
- Montgomery - Chapter 13 #38*
39. The United States imports some minerals of which it has ample supplies and production exceeding current demands.
TRUE
- Montgomery - Chapter 13 #39*
40. When metal prices rise sharply, this spurs immediate development of new mines, which then begin production in a year or two.
FALSE
- Montgomery - Chapter 13 #40*
41. Limestone is the source for Portland cement, the principal binder for concrete on which the construction industry depends.
TRUE
- Montgomery - Chapter 13 #41*
42. We have probably already found most of the "easy ores" in accessible parts of the world.
TRUE
- Montgomery - Chapter 13 #42*
43. The link between plate tectonics and formation of mineral deposits has made the search for new ores more efficient.
TRUE
- Montgomery - Chapter 13 #43*
44. Producing new minerals by refining new ores and mining is more energy efficient than recycling.
FALSE
- Montgomery - Chapter 13 #44*
45. A problem with substituting plastics for metals, to conserve the metals is that many plastics are made from our limited supply of oil.
TRUE
- Montgomery - Chapter 13 #45*

46. Recycling of steel is relatively difficult because alloys of specific composition may be required for specific applications.
TRUE
- Montgomery - Chapter 13 #46*
47. Wallboard (Sheetrock) is made from gypsum.
TRUE
- Montgomery - Chapter 13 #47*
48. Some materials such as road salt and phosphorous and potash in fertilizers cannot be recovered.
TRUE
- Montgomery - Chapter 13 #48*
49. Underground mines do not cause disturbance of the land surface except at the mine entrance, either during or after mining.
FALSE
- Montgomery - Chapter 13 #49*
50. U.S. stockpiling of strategically important minerals may, in the near term, require the country to increase some mineral imports.
TRUE
- Montgomery - Chapter 13 #50*
51. The success of mine reclamation is often heavily dependent on availability of water.
TRUE
- Montgomery - Chapter 13 #51*
52. Underground mining is the most hazardous occupation in the United States.
TRUE
- Montgomery - Chapter 13 #52*

13 Summary

<u>Category</u>	<u># of Questions</u>
Montgomery - Chapter 13	52