1. Glass is chemically related to what mineral?

- **Fluorite**
- **Quartz**
- **Pyrite**
- **Halite**

2. Sometimes metamorphic rock is found adjacent to an igneous intrusion, as shown in the drawing. According to geologists, what causes this phenomenon?

- **F** The metamorphic rock was lighter than the magma and floated to the top and sides.
- **G** The surrounding rock was metamorphosed when it came into contact with the hot magma.
- **H** Vapor from the magma condensed to form metamorphic rock.
- **J** The magma replaced all but the outer edge of existing metamorphic rock.
3. The picture shows the layers in the bank of a river. The differences in the size of the particles in the layers are most likely caused by differences in the -

- speed of the water carrying the sediments
- types of plants living on the bank
- types of animals digging in the sediments
- thickness of winter ice in the river

4. As landmasses drifted over the Earth from 180 million years ago to the present day, one significant change that occurred was the -

- increase in overall landmass size
- decrease in the number of transverse faults
- increase in the number of trenches
- decrease in the number of mid-ocean ridges
5. All of the following supports the theory of continental drift except that -

F. the continents seem to fit together like pieces of a puzzle
G. there are similar fossils on different continents
H. mountain ranges in South America and Africa line up
I. the North Pole and Antarctica are covered with ice

6. Question Number 6 of 20 - Earth Science

Using this procedure, what property of a mineral can be found?

F. Crystal arrangement
G. Specific gravity
H. Brittleness
I. Fracture

7. Igneous rocks are formed by -

F. heat and pressure on existing rocks
G. evaporation of water, leaving solids behind
H. cooling and hardening of molten rock
I. layers of mud on the bottom of a lake
8. In karst regions, caves are carved by the flow of water through limestone bedrock. How do the stalagmites and stalactites in the caves develop?

- They are carbonate deposits formed by dripping water in air-filled cavities.
- They are granite intrusions that remain behind after water dissolves the surrounding limestone.
- They are crystals that grow as water hollows out the cavern.
- They are carvings made in limestone by the swirling water as it hollows out the cavern.

9. Which layer of the above soil profile would be affected the most by weathering and erosion?

- Layer 1
- Layer 2
- Layer 3
- Layer 4
10. What does Pangaea mean?

A. It is the name of an extinct volcano.
B. It is the French word for volcano.
C. It is the name of an ancient supercontinent.
D. It is a huge disruption of the Earth's atmospheric circulation.

11. One part of California is on the Pacific Plate, while the remainder of the state is on the North American Plate. The two plates are moving to the northwest at different speeds, causing one plate to slide past the other. This movement in plates creates a -

A. normal fault
B. reverse fault
C. strike-slip fault
D. thrust fault

12. Scientists use volcanoes and earthquake activity to establish -

A. plate boundaries
B. lines of latitude
C. borders between countries
D. the density of rock layers
13. The mineral in the above table that has a blue color and will scratch garnet is -

- [X] pyrite
- [ ] garnet
- [ ] magnetite
- [ ] topaz

14. Which of the following best explains the rolling topography of the Valley and Ridge province in Virginia?

- [X] Folding and differential erosion
- [ ] Block faulting of marine sediments
- [ ] Ocean currents and uplift
- [ ] Rifting and ocean waves
15. Which of these provides the **best** evidence of the environment in which an igneous rock was formed?

- **F** Thickness
- **G** Color
- **H** Size
- **I** Texture

16. Each dot on the above diagram marks the origin of an earthquake. The area with the **highest** concentration of earthquake origins marks -

- **F** a line of Earth's magnetic field
- **G** a seam of soft rock, such as limestone
- **H** the path of the subducting tectonic plate
- **I** the location of a developing igneous intrusion

17. The Earth's mantle is made up of very hot material that rises to the top of the mantle, cools, then sinks, reheats, and rises again, constantly repeating the cycle. This action, which causes the Earth's crust to move, is known as -

- **F** convection currents
- **G** magnetic fields
- **H** hot spots
- **I** advection forces
18. While on vacation, a student visits the area around a volcano that has recently erupted. The student can expect to find samples of -

- clastic sedimentary rock
- nonfoliated metamorphic rock
- chemically formed sedimentary rock
- extrusive igneous rock

19. The breakdown of rocks and minerals into smaller particles without a change in composition is called -

- igneous intrusion
- chemical precipitation
- mechanical weathering
- metamorphic foliation
20. Which layer of the soil profile would be affected the most by weathering and erosion?

F  1
G  2
H  3
I  4

21. Some extrusive igneous rocks, such as obsidian, are glassy because they -

F  cool rapidly
G  have low melting points
H  contain water
I  are made of only one mineral
22. Plant material that accumulates and hardens on the floor of a swamp is known as peat. If a layer of sediments accumulates on top of the peat, its weight, after thousands of years, can compress the peat to form coal. Which of the following types of coal probably formed from the greatest pressure?

- Anthracite (the hardest coal)
- Bituminous coal (softer than anthracite)
- Subbituminous coal (softer than bituminous)
- Lignite (the softest coal)

23. Which of the following can result when underground water is heated by hot igneous rock?

- Metamorphism
- Geysers
- Salt domes
- Karst topography
These minerals may be grouped together because they all have:

- **F** the same crystal systems
- **G** constant density values
- **H** shiny streaks
- **I** the oxygen ion
25. Which answer below matches the number in the drawing with the correct name of a sedimentary formation?

F 1-delta, 2-continental rise, 3-flood plain
G 1-alluvial fan, 2-flood plain, 3-delta
H 1-barrier island, 2-continental shelf, 3-alluvial fan
I 1-continental shelf, 2-continental rise, 3-barrier island

26. Because granite cools below the surface of the Earth, it is -

F an igneous extrusive rock
G an igneous intrusive rock
H a sedimentary rock
I a metamorphic rock
Even though the Earth's inner core is hotter than the liquid outer core, it is still solid because -

- the heat rising from the inner core is melting the outer core
- there is more water in the outer core and it dilutes the materials
- the outer core is farther from the center, and there is less gravity holding it together
- the pressure from all of Earth's layers keeps it in a solid state
### MOHS’ SCALE OF HARDNESS

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Hardness</th>
<th>Common Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Talc</td>
<td>1</td>
<td>Scratched by a fingernail</td>
</tr>
<tr>
<td>Gypsum</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Calcite</td>
<td>3</td>
<td>Scratched by a copper coin</td>
</tr>
<tr>
<td>Fluorite</td>
<td>4</td>
<td>Scratched by a knife blade</td>
</tr>
<tr>
<td>Apatite</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Feldspar</td>
<td>6</td>
<td>Scratches a knife blade</td>
</tr>
<tr>
<td>Quartz</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Topaz</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>Corundum</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Diamond</td>
<td>10</td>
<td>Scratches all common materials</td>
</tr>
</tbody>
</table>

28. Which conclusion can be made based on the information in the chart?

- **F** Quartz is harder than topaz.
- **G** Calcite is harder than apatite.
- **H** Fluorite is harder than feldspar.
- **I** Gypsum is harder than talc
29. **Shock waves**

The point from which an earthquake originates is called the -

- focus
- epicenter
- fault line
- shock wave

30. Which of these can determine the size of grains in igneous rocks?

- Amount of rare minerals
- Distance from a plate boundary
- Size of the volcano
- Cooling rate of molten rock
31. Which of these pictures shows the last in the sequence of events?

32. Which of the following properties refers to the colored powder resulting from rubbing a mineral against a harder surface?

   - **F** Hardness
   - **G** Luster
   - **H** Cleavage
   - **J** Streak

33. Which of these is most important in determining how a rock was formed?

   - **F** Color and shape
   - **G** Luster and hardness
   - **H** Composition and texture
   - **J** Size and weight
34. Which of the following is not considered a result of the movement of tectonic plates?

- F Earthquakes
- G Mountain ranges
- H Increased volcanic activity
- I Karst topography

35. In the illustration shown, which layer is an example of an intrusion?

- F 1
- G 2
- H 3
- I 4

36. Which mineral is easily identified by smell?

- F Galena
- G Pyrite
- H Quartz
- I Sulfur
37. The diagram shown illustrates which geological process?

- **F** Faulting
- **G** Folding
- **H** Weathering
- **I** Metamorphism

38. The mountain shown is composed of deformed sedimentary layers. They are located near a tectonic plate boundary and are still increasing in elevation due to -

- **F** colliding tectonic plates
- **G** seafloor spreading of tectonic plates
- **H** subduction of a tectonic plate
- **I** transform faulting of a tectonic plate

39. Metamorphic rocks with a layered or banded look are called -

- **F** foliated
- **G** unfoliated
- **H** striated
- **I** evaporated
40. The folding and faulting found in the rocks of the Blue Ridge Mountains of Virginia were created by -

F  collisions of continental plates  
G  wave action of prehistoric ocean  
H  the Coriolis effect  
I  heating and cooling of the prehistoric atmosphere

41. 

This igneous rock is coarse-grained. The dark-colored mineral composing this rock is probably

F  magnetite  
G  kaolin  
H  feldspar  
I  quartz
42. In which province would clay, sand, and gravel deposits be found?

- Appalachian Plateau
- Valley and Ridge
- Blue Ridge
- Coastal Plain

43. Which geologic event occurred first?

- Pangaea underwent formation.
- South America and Africa split apart.
- Iceland formed at the mid-Atlantic ridge.
- India collided with Asia, forming the Himalayan Mountains.

44. The presence of many metamorphic rocks in Virginia is an indication that the area has been subjected to -

- intense heat and pressure
- limited volcanic activity
- deep ocean venting
- massive solar bombardment
45. Which of the following major earthquakes did not occur at a boundary between tectonic plates?

- F. South Carolina (U.S.A.) 1886
- G. San Francisco (U.S.A.) 1906
- H. Messina (southern Italy) 1908
- I. Chillan (Chile) 1939

46. All of the following are characteristics of metamorphic rocks except -

- F. flattened crystals
- G. colored, parallel layers
- H. bending from pressure
- I. holes from trapped gases
47. Which of the following minerals found in the northern Piedmont province is known as "fool's gold"?

F  Pyrite
G  Hematite
H  Galena
I  Limonite
48. Which of the following rocks represents an igneous intrusion?

- [ ] Granite
- [ ] Limestone
- [ ] Marble
- [ ] Shale
49. Which of the landforms is *most* likely to result when two continents collide?

50. What property is shared by many gemstones, such as diamonds, rubies, sapphires, emeralds, and topaz?

- [F] Extreme hardness
- [G] High specific gravity
- [H] Carbon as the primary element
- [J] Ductility