

- Which mineral is mined for its iron content?
  - hematite**
  - fluorite
  - galena
  - talc
- Which material is made mostly of the mineral quartz?
  - sulfuric acid
  - pencil lead
  - plaster of paris
  - window glass**
- Most rock gypsum is formed by the
  - heating of previously existing foliated bedrock
  - cooling and solidification of lava
  - compaction and cementation of shells and skeletal remains
  - chemical precipitation of minerals from seawater**
- Of the Earth's more than 2,000 identified minerals, only a small number are commonly found in rocks. This fact indicates that most
  - minerals weather before they can be identified
  - minerals have properties that are difficult to identify
  - rocks have a number of minerals in common**
  - exposed surface rocks are igneous
- Which rock is composed of the mineral halite that formed when seawater evaporated?
  - limestone
  - dolostone
  - rock gypsum
  - rock salt**
- Silicate minerals contain the elements silicon and oxygen. Which list contains only silicate materials?
  - graphite, talc, and selenite gypsum
  - potassium feldspar, quartz, and amphibole**
  - calcite, dolomite, and pyroxene
  - biotite mica, fluorite, and garnet

- Although more than 2,000 minerals have been identified, 90% of Earth's lithosphere is composed of the 12 minerals listed below.

Rock-Forming Minerals	
feldspar	augite
quartz	garnet
mica	magnetite
calcite	olivine
hornblende	pyrite
kaolinite	talc

The best explanation for this fact is that most rocks

- are monomineralic
  - are composed only of recrystallized minerals
  - have a number of minerals in common**
  - have a 10% nonmineral composition
- Which element, found in both biotite mica and muscovite mica, makes up the greatest percent by volume of Earth's crust?
    - nitrogen
    - oxygen**
    - potassium
    - silicon

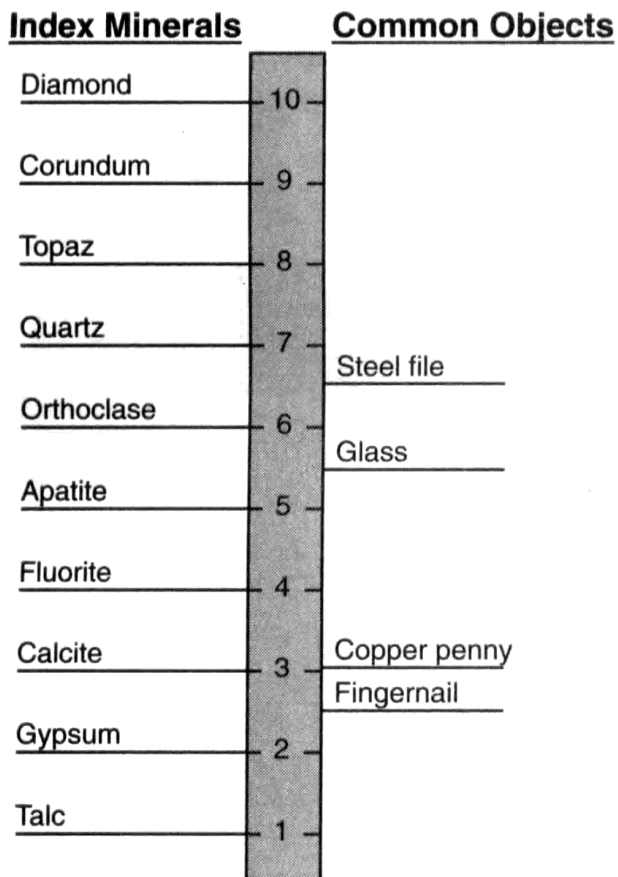
9. The table below shows some properties of four different minerals.

Mineral Variety	Color	Hardness	Luster	Composition
flint	black	7	nonmetallic	SiO <sub>2</sub>
chert	gray, brown, or yellow	7	nonmetallic	SiO <sub>2</sub>
jasper	red	7	nonmetallic	SiO <sub>2</sub>
chalcedony	white or light color	7	nonmetallic	SiO <sub>2</sub>

The minerals listed in the table are varieties of which mineral?

- A) garnet      B) magnetite      C) **quartz**      D) olivine

10. The diagram below shows the index minerals of Mohs hardness scale compared with the hardness of some common objects.

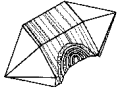


Which statement is best supported by the diagram?

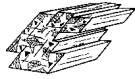
- A) A fingernail will scratch calcite but not gypsum.  
B) **Calcite will be scratched by a copper penny.**  
C) The mineral apatite will scratch topaz.  
D) A steel file has a hardness of about 7.5.

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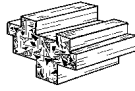
11. The diagram below shows four mineral samples, each having approximately the same mass.



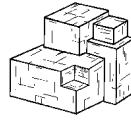
Quartz



Amphibole



Pyroxene



Galena

If all four samples are placed together in a closed, dry container and shaken vigorously for 10 minutes, which mineral sample would experience the most abrasion?

- A) quartz      B) amphibole      C) pyroxene      **D) galena**
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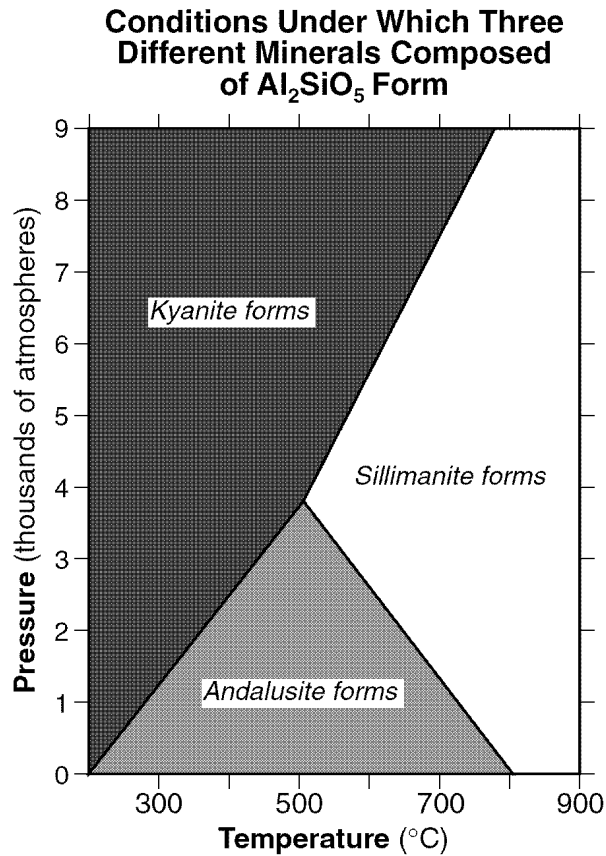
12. A human fingernail has a hardness of approximately 2.5. Which two minerals are *softer* than a human fingernail?

- A) calcite and halite  
B) sulfur and fluorite  
**C) graphite and talc**  
D) pyrite and magnetite

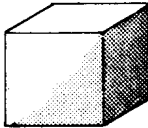
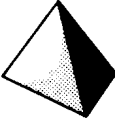

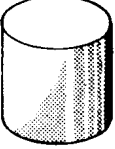
13. Which mineral is commonly mined as a source of the element lead (Pb)?

- A) galena**      B) quartz  
C) magnetite      D) gypsum
-

14. Base your answer to the following question on the graph below, which shows the crustal temperature and pressure conditions under which three different minerals with the same chemical composition ( $\text{Al}_2\text{SiO}_5$ ) crystallize.



Which mineral has a chemical composition most similar to andalusite, sillimanite, and kyanite?

- A) pyrite  
B) gypsum  
C) dolomite  
D) **potassium feldspar**
- 
15. Which of the following elements is not found in Plagioclase Feldspar?  
A) Na    B) Al    C) Si    **D) Pb**
16. Which element combines with silicon to form the tetrahedral unit of structure of the silicate minerals?  
**A) oxygen**                      B) nitrogen  
C) potassium                      D) hydrogen
17. The cleavage or fracture of a mineral is normally determined by the mineral's  
A) density  
B) oxygen content  
**C) internal arrangement of atoms**  
D) position among surrounding minerals
18. Which object is the best model of the shape of a silicon-oxygen structural unit?  
A)                       B)   
C)                       D) 
19. Which two minerals have cleavage planes at right angles?  
A) biotite mica and muscovite mica  
B) sulfur and amphibole  
C) quartz and calcite  
**D) halite and pyroxene**

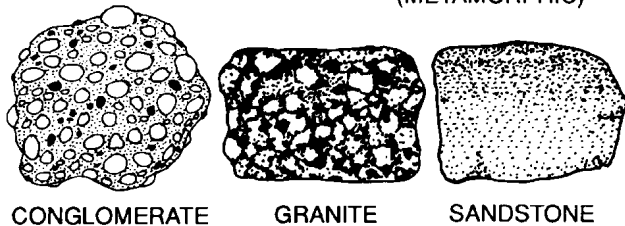
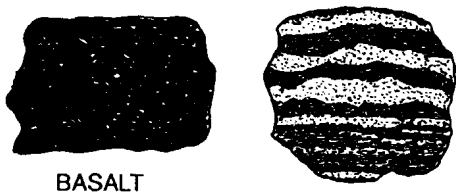
20. Which sedimentary rock is formed by the compaction and cementation of sorted sediments 0.05 centimeter in diameter?

- A) shale                      B) siltstone  
**C) sandstone**                D) conglomerate

21. A rock is composed of several large, rounded pebbles and sand grains cemented together. Which inference about the rock is best supported by this description?

- A) The rock is older than the pebbles.  
 B) The rock is igneous.  
**C) The rock is sedimentary.**  
 D) The rock resulted from evaporation of sea water.

22. Base your answer to the following question on the diagrams below of five rock samples.



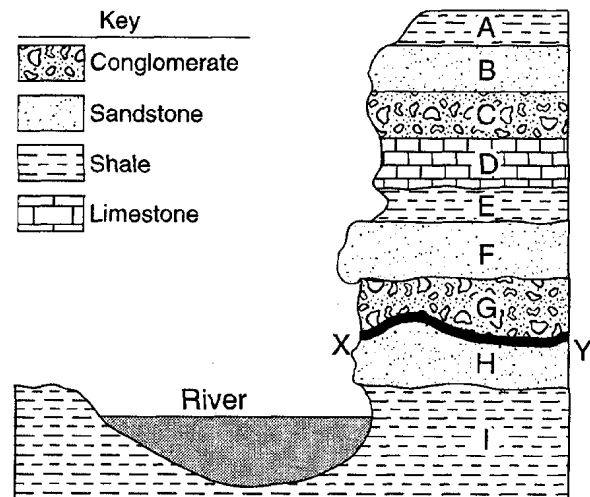
Which sample would most likely contain fossils?

- A) gneiss                      B) granite  
**C) sandstone**                D) basalt

23. Which bedrock would be most likely to contain fossils?

- A) Precambrian granite  
**B) Cambrian shale**  
 C) Pleistocene basalt  
 D) Middle-Proterozoic quartzite

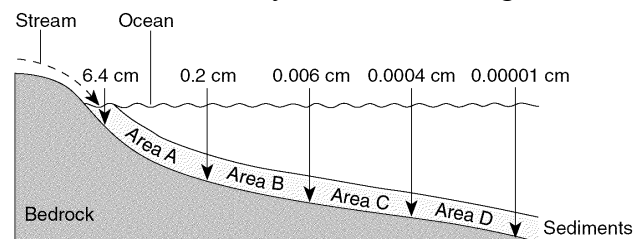
24. Base your answer to the following question on the diagram below, which is a geologic cross section of an area where a river has exposed a 300-meter cliff of sedimentary rock layers. The rock layers are labeled *A* through *I*. Line *XY* represents a gap in the geologic record (an unconformity).



If rock layer *G* contained angular fragments instead of rounded fragments, it would be classified as a

- A) breccia**  
 B) gneiss  
 C) siltstone  
 D) chemical limestone

25. The profile below shows the average diameter of sediment that was sorted and deposited in specific areas *A*, *B*, *C*, and *D* by a stream entering an ocean.



As compaction and cementation of these sediments eventually occur, which area will become siltstone?

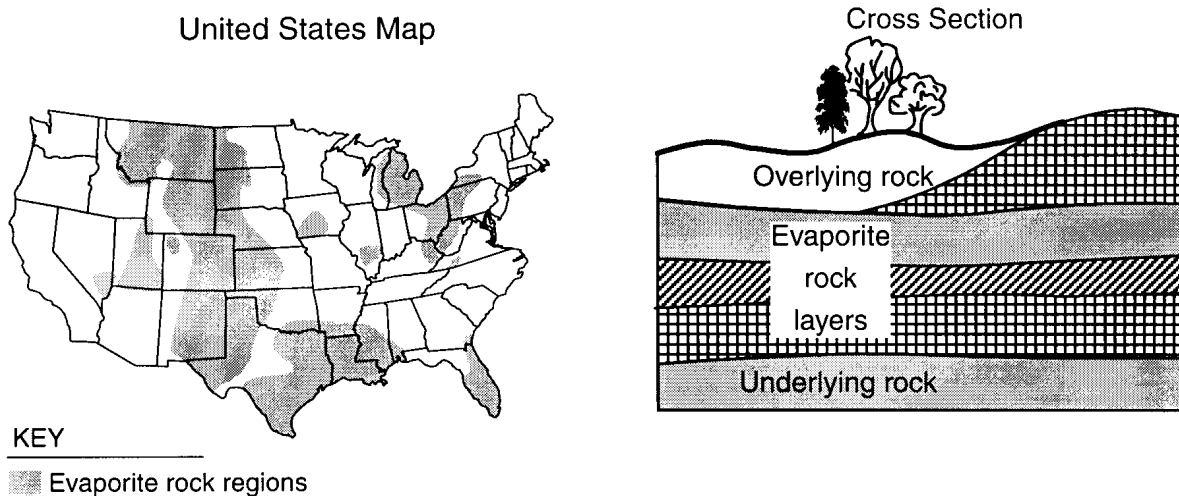
- A) *A*    B) *B*    C) *C*    D) *D*

26. Brachiopod fossils were found in a layer of limestone rock. In which type of environment did the limestone layer form?

- A) shallow marine**    B) tropical forest  
 C) coastal plain        D) interior grassland

27. Which rock is formed by precipitation from evaporating water?
- A) granite                      B) sandstone  
C) shale                         D) **salt**
28. Dolostone is formed by the
- A) local metamorphism of marble  
B) biological deposition of skeletons and shells  
C) **chemical replacement of limestone**  
D) mechanical deposition of silts
29. Which process could lead most directly to the formation of a sedimentary rock?
- A) metamorphism of unmelted material  
B) slow solidification of molten material  
C) sudden upwelling of lava at a mid-ocean ridge  
D) **precipitation of minerals from evaporating water**

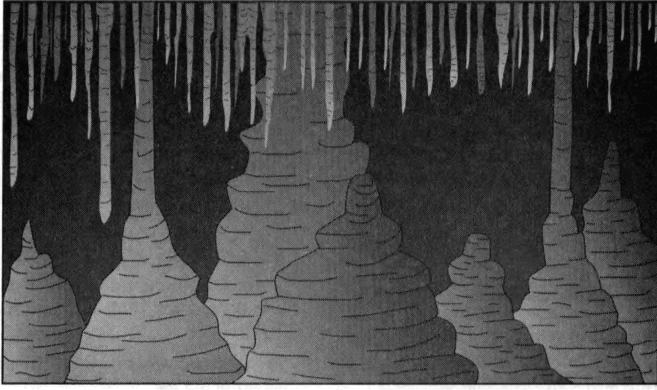
Base your answers to questions 30 through 32 on the map and cross section below. The shaded areas on the map represent regions of the United States that have evaporite rock layers (layers of rock formed from the evaporation of seawater) under the surface bedrock. The cross section shows the generalized structure of the area in which the evaporite layers are found in New York State.



30. These evaporite deposits could be composed of which minerals?
- A) garnet and pyroxene                      B) mica and feldspar  
C) hornblende and olivine                      D) **halite and gypsum**
31. The surface rocks overlying these evaporite rock layers are most likely which type of rock?
- A) **sedimentary**                                      B) plutonic igneous  
C) regional metamorphic                      D) contact metamorphic
32. Each of these evaporite rocks is normally formed by
- A) **chemical processes**                              B) cooling of lava  
C) decreased heat and pressure                      D) melting of magma

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33. The diagram below shows some features in a cave.



Which type of rock was chemically weathered by acidic groundwater to produce the cave and its features?

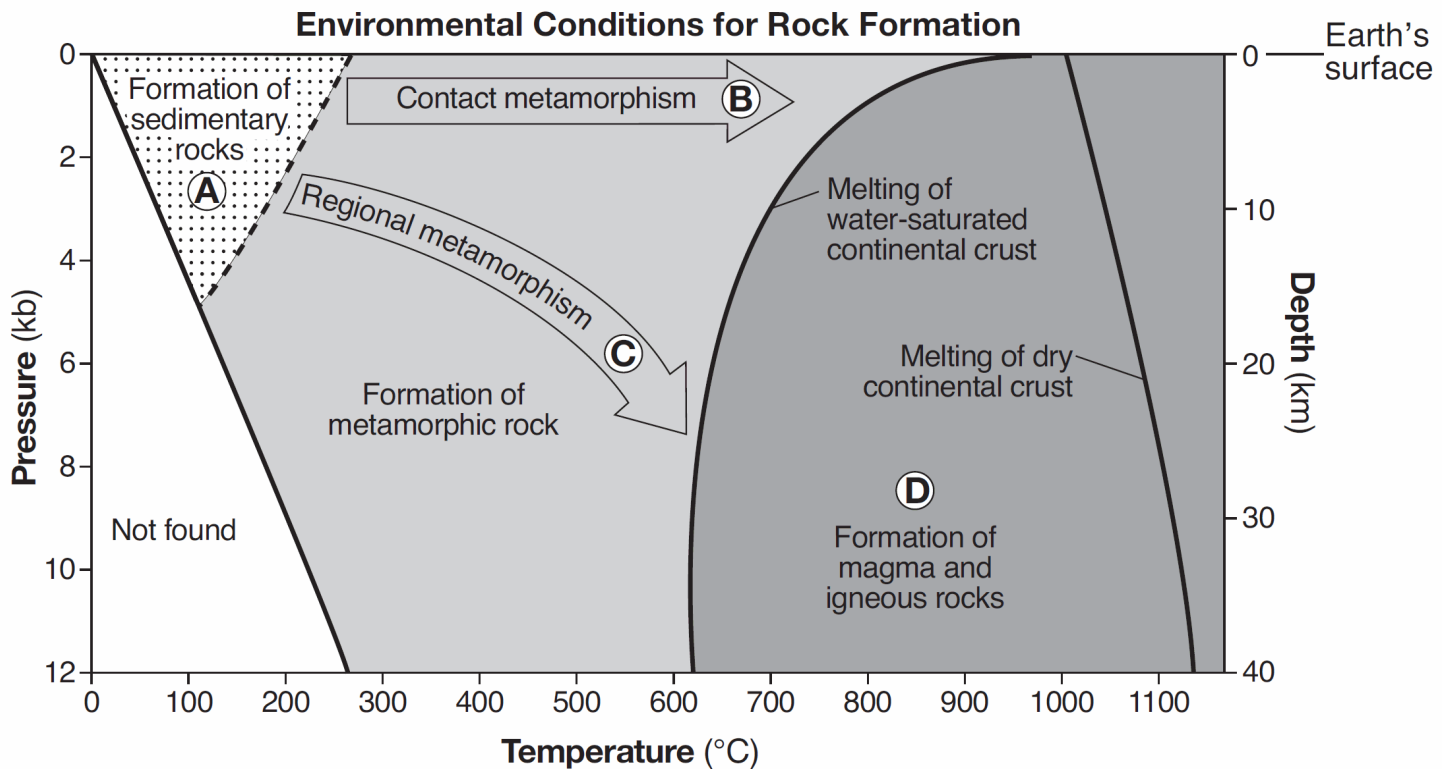
- A) siltstone                      B) basalt  
C) quartzite                      **D) limestone**

34. Which rock type most often contains fossils?

- A) gabbro                      B) quartzite  
**C) limestone**                      D) metaconglomerate
-

Base your answers to questions 35 and 36 on the graph below and on your knowledge of Earth science.

The graph shows the temperature, pressure, and depth environments for the formation of the three major rock types. Pressure is shown in kilobars (kb). Letters A through D identify different environmental conditions for rock formation.



35. Which rock is most likely to form directly from rock material at a depth of 30 km and a temperature of 1000°C?

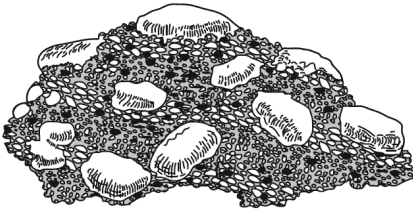
- A) quartzite      B) scoria      C) shale      **D) granite**

36. Which letter represents the environmental conditions necessary to form gneiss?

- A) A      B) B      **C) C**      D) D

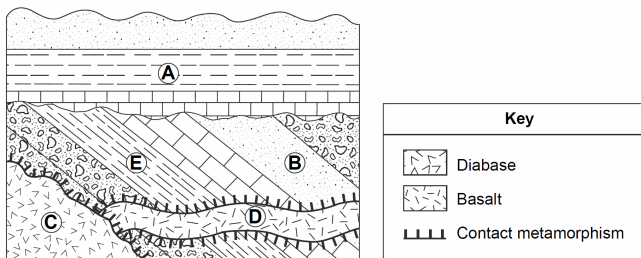


37. Base your answer to the following question on the diagram below, which represents a rock composed of cemented pebbles and sand.



Which change would most likely occur if this rock became buried deep within Earth's crust and was subjected to intense heat and pressure, but did *not* melt?

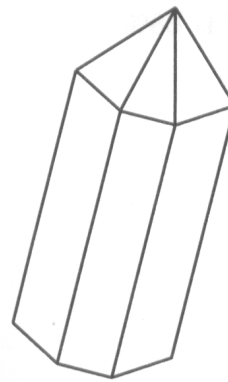
- A) The density of the pebbles and sand would decrease.  
 B) The rock would become a plutonic rock composed mostly of quartz.  
 C) The rock would become more felsic with a higher concentration of magnesium.  
**D) The pebbles would become distorted and the sand would be recrystallized.**
38. The geologic cross section below shows several rock units of Earth's crust. Some rock units are labeled *A* through *E*.



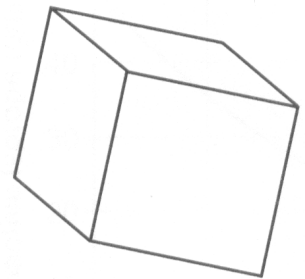
Which two rock units formed from sediments deposited in horizontal layers?

- A) ***A* and *B***                      B) *B* and *C*  
 C) *C* and *D*                        D) *D* and *E*

39. The diagrams below show the crystal shapes of two minerals.



Quartz



Halite

Quartz and halite have different crystal shapes primarily because

- A) light reflects from crystal surfaces  
 B) energy is released during crystallization  
 C) of impurities that produce surface variations  
**D) of the internal arrangement of the atoms**



**Answer Key**  
**Minerals & Sed Rx**

- |     |          |     |          |
|-----|----------|-----|----------|
| 1.  | <u>A</u> | 36. | <u>C</u> |
| 2.  | <u>D</u> | 37. | <u>D</u> |
| 3.  | <u>D</u> | 38. | <u>A</u> |
| 4.  | <u>C</u> | 39. | <u>D</u> |
| 5.  | <u>D</u> | 40. | <u>A</u> |
| 6.  | <u>B</u> |     |          |
| 7.  | <u>C</u> |     |          |
| 8.  | <u>B</u> |     |          |
| 9.  | <u>C</u> |     |          |
| 10. | <u>B</u> |     |          |
| 11. | <u>D</u> |     |          |
| 12. | <u>C</u> |     |          |
| 13. | <u>A</u> |     |          |
| 14. | <u>D</u> |     |          |
| 15. | <u>D</u> |     |          |
| 16. | <u>A</u> |     |          |
| 17. | <u>C</u> |     |          |
| 18. | <u>B</u> |     |          |
| 19. | <u>D</u> |     |          |
| 20. | <u>C</u> |     |          |
| 21. | <u>C</u> |     |          |
| 22. | <u>C</u> |     |          |
| 23. | <u>B</u> |     |          |
| 24. | <u>A</u> |     |          |
| 25. | <u>C</u> |     |          |
| 26. | <u>A</u> |     |          |
| 27. | <u>D</u> |     |          |
| 28. | <u>C</u> |     |          |
| 29. | <u>D</u> |     |          |
| 30. | <u>D</u> |     |          |
| 31. | <u>A</u> |     |          |
| 32. | <u>A</u> |     |          |
| 33. | <u>D</u> |     |          |
| 34. | <u>C</u> |     |          |
| 35. | <u>D</u> |     |          |
-