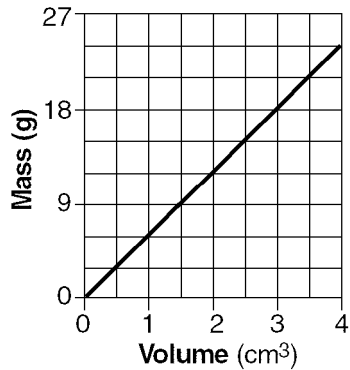


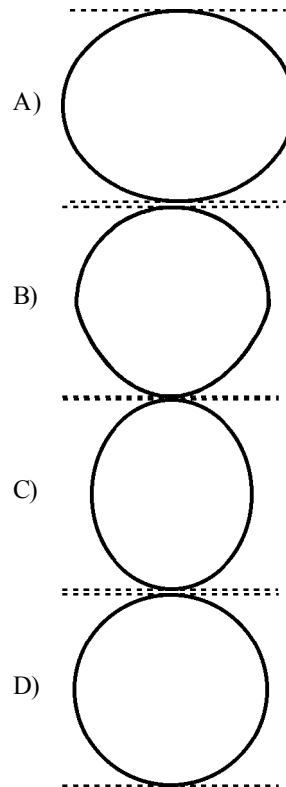
Name: \_\_\_\_\_

- 1) Which statement *best* describes the stratosphere? [Refer to the *Earth Science Reference Tables*.]
- A) It is located 75 kilometers above sea level.  
 B) It absorbs large amounts of water vapor from the troposphere.  
 C) It has greater pressure at the top than at the bottom.  
 D) It is warmer at the top than at the bottom.
- 2) The graph below shows the relationship between the mass and volume of a mineral. What is the density of this mineral?



- A) 30 g/cm<sup>3</sup>                      C) 6.0 g/cm<sup>3</sup>  
 B) 9.0 g/cm<sup>3</sup>                      D) 4.5 g/cm<sup>3</sup>
- 3) Under the same conditions of temperature and pressure, three different samples of the same uniform substance will have the same
- A) volume                              C) density  
 B) shape                                D) mass
- 4) Measurements taken from space show the Earth to be
- A) pear shaped  
 B) greatest in diameter at the Equator  
 C) a perfect sphere  
 D) greatest in diameter at the poles

- 5) Which diagram most accurately shows the cross-sectional shape of the Earth?



- 6) If wastewater from a nuclear power plant raises the temperature of a nearby body of water, the concentration of biologic pollutants in the water will most likely
- A) increase  
 B) remain the same  
 C) decrease
- 7) From which set of polar and equatorial diameters can the actual shape of the Earth be inferred?
- A) polar diameter = 12,756 km,  
 equatorial diameter = 12,714 km  
 B) polar diameter = 12,756 km,  
 equatorial diameter = 12,756 km  
 C) polar diameter = 12,714 km,  
 equatorial diameter = 12,756 km  
 D) polar diameter = 12,714 km,  
 equatorial diameter = 12,714 km
- 8) What is the mass of a rock that has a density of 2.5 grams per cubic centimeter and a volume of 4.0 cubic centimeters?
- A) 4.0 g                              C) 6.2 g  
 B) 10.0 g                             D) 1.6 g
- 9) Which list shows atmospheric layers in the correct order upward from the Earth's surface?
- A) troposphere, stratosphere, mesosphere, thermosphere  
 B) stratosphere, mesosphere, troposphere, thermosphere  
 C) thermosphere, mesosphere, stratosphere, troposphere  
 D) thermosphere, troposphere, mesosphere, stratosphere

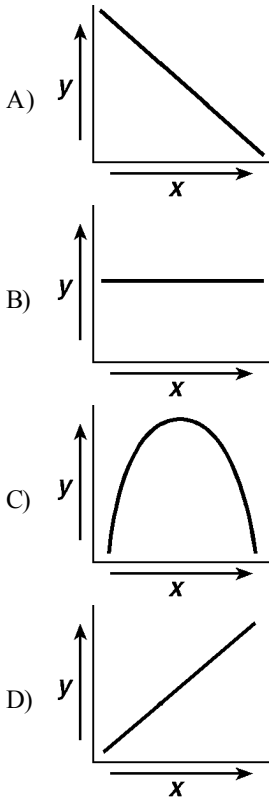


- 19) What are the *best* frames of reference for describing change?
- A) volume and mass  
 B) time and distance  
 C) speed and density  
 D) weight and temperature
- 20) The table below identifies four density groups.

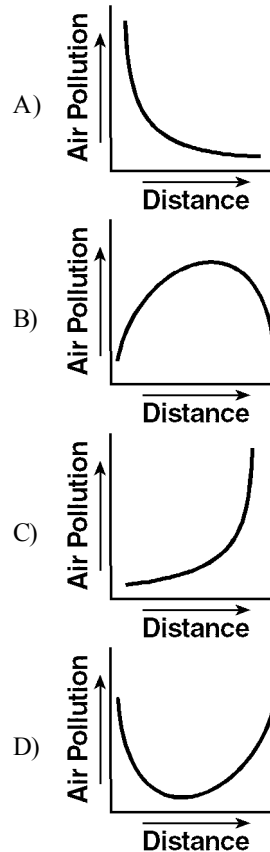
Group	Density g/cm <sup>3</sup>
A	1.0-3.9
B	4.0-7.9
C	8.0-11.9
D	12.0-15.9

According to this classification system, a sample of quartz with a mass of 27 grams and a volume of 10 cubic centimeters should be placed in group

- A) A      B) B      C) C      D) D
- 21) According to the *Earth Science Reference Tables*, the most abundant gas in the troposphere is
- A) oxygen                      C) nitrogen  
 B) carbon dioxide            D) water vapor
- 22) Which graph *best* shows the general relationship between the population density of an area (*x*-axis) and the amount of pollution in the area (*y*-axis)?



- 23) Which graph *best* represents the most common relationship between the amount of air pollution and the distance from an industrial city?

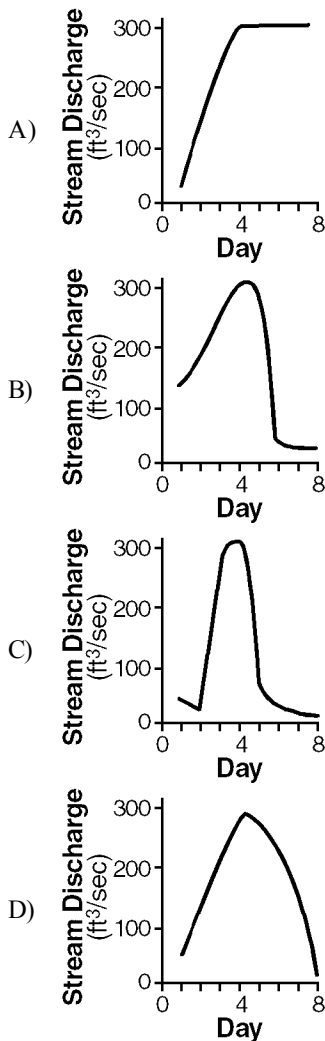


- 24) The total amount of water vapor per cubic meter in the atmosphere at sea level is approximately
- A) 1 g/m<sup>3</sup>                      C) 15 g/m<sup>3</sup>  
 B) 8 g/m<sup>3</sup>                      D) 30 g/m<sup>3</sup>
- 25) Students calculated the circumference of a globe to be 60. centimeters. The actual circumference of the globe is 63 centimeters. The percent deviation of the students' calculation was
- A) 0.48%                      C) 21%  
 B) 4.8%                        D) 5.0%
- 26) The *best* example of a noncyclic event is
- A) a phase change of the Moon  
 B) a volcanic eruption  
 C) an apparent star movement  
 D) a change of seasons

- 27) The data table below shows the stream discharge in April for a creek in the southern United States for a period of 8 days.

Day	Stream Discharge (ft <sup>3</sup> /sec)
1	20.0
2	6.0
3	269.0
4	280.0
5	48.0
6	21.0
7	14.0
8	5.0

Which graph most accurately shows stream discharge for the 8-day period?

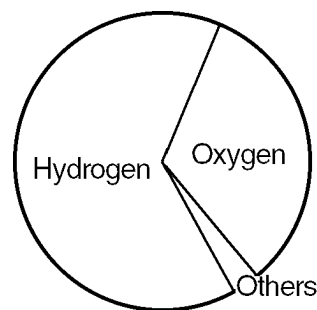


- 28) Oxygen is the most abundant element by volume in the Earth's
- A) hydrosphere                      C) crust  
B) inner core                         D) troposphere

- 29) Which statement about a rock sample is most likely an inference?
- A) The rock is made of small, dark-colored crystals.  
B) The rock has thin, distinct layers.  
C) The rock has flat sides and sharp corners.  
D) The rock has changed color due to weathering.
- 30) According to the *Earth Science Reference Tables*, as altitude increases from the tropopause to the mesopause, the atmospheric temperature will
- A) increase, then decrease  
B) decrease, only  
C) decrease, then increase  
D) increase, only
- 31) The primary purpose of a classification system is to enable people to
- A) extend their powers of observation  
B) eliminate inaccurate inferences  
C) organize observations in a meaningful way  
D) make measurements that are very accurate
- 32) While walking on a glacier, an observer makes several statements. Which statement is an inference?
- A) "Some parts of this glacier will start melting this spring."  
B) "There are many cracks in this glacier."  
C) "The rocks on this glacier are of different sizes."  
D) "Some of the snow on this glacier is powdery."
- 33) According to the *Earth Science Reference Tables*, the temperature in the stratosphere ranges from approximately
- A) 10° F to 35° F                      C) 10° C to 50° C  
B) -55° F to 0° F                      D) -55° C to 0° C
- 34) A student determines the density of a mineral to be 3.5 grams per cubic centimeter. If the accepted value is 4.8 grams per cubic centimeter, what is the student's approximate percent error?
- A) 73%                                      C) 13%  
B) 37%                                      D) 27%
- 35) According to the *Earth Science Reference Tables*, what is the approximate thickness of the troposphere?
- A) 27 km                                      C) 7 km  
B) 50 km                                      D) 12 km
- 36) An interface is *best* described as a
- A) region where no changes are occurring  
B) region that lies just below the surface of the Earth  
C) boundary across which energy may be exchanged  
D) change in the state of the environment
- 37) The use of a triple-beam balance to determine the mass of a rock is an example of measuring by using
- A) all of the five senses  
B) a direct comparison with a standard  
C) inferences and interpretations  
D) a combination of dimensional quantities

- 38) Water has the *greatest* density at
- 100°C in the gaseous phase
  - 4°C in the solid phase
  - 0°C in the solid phase
  - 4°C in the liquid phase
- 39) The *best* evidence that the Earth has a spherical shape would be provided by
- the prevailing wind direction at many locations on the Earth's surface
  - photographs of the Earth taken from space
  - the time the Earth takes to rotate on its axis at different times of the year
  - the change in the time of sunrise and sunset at a single location during 1 year

- 40) The graph below represents percentage of elements by volume.



According to the *Earth Science Reference Tables*, this graph *best* represents the elements of the Earth's

- hydrosphere
  - stratosphere
  - lithosphere
  - troposphere
- 41) Which layer of the atmosphere has the *greatest* density?
- stratosphere
  - thermosphere
  - troposphere
  - mesosphere
- 42) A student determines the density of a rock to be 2.2 grams per cubic centimeter. If the accepted density of the rock is 2.5 grams per cubic centimeter, what is the percent deviation (percentage of error) from the accepted value?
- 13.6%
  - 12.0%
  - 30.0%
  - 8.8%
- 43) A pebble has a mass of 35 grams and a volume of 14 cubic centimeters. What is its density?
- 2.5 g/cm<sup>3</sup>
  - 490 g/cm<sup>3</sup>
  - 4.0 g/cm<sup>3</sup>
  - 0.4 g/cm<sup>3</sup>

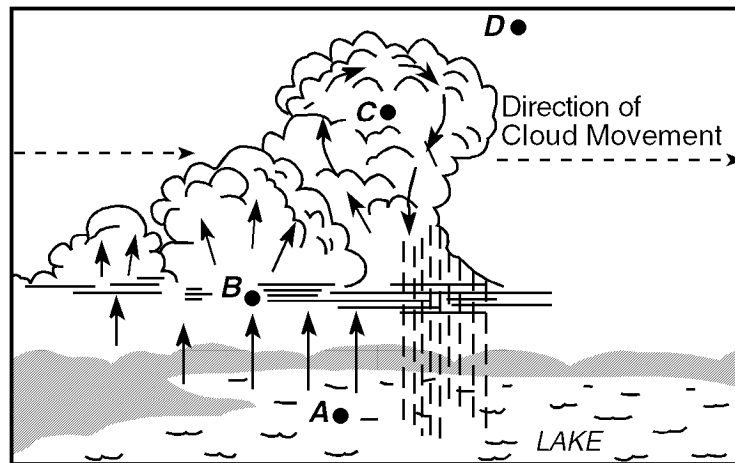
Questions 44 through 46 refer to the following:

The table below shows data for a student's collection of rock samples *A* through *I*, which are classified into groups *X*, *Y*, and *Z*. For each rock sample, the student recorded mass, volume, density, and a brief description. The density for rock *D* has been left blank.

**Rock Collection**

Group	Rock	Mass (g)	Volume (cm <sup>3</sup> )	Density (g/cm <sup>3</sup> )	Description
X	A	82.9	34.4	2.41	Grey, smooth, rounded
	B	114.2	42.6	2.68	Brown, smooth, rounded
	C	144.7	63.2	2.29	Black, smooth rounded
Y	D	159.4	59.7		Black and grey crystals, angular
	E	87.7	33.1	2.65	Clear and pink crystals, angular
	F	59.6	21.0	2.84	White, grey, and black crystals, angular
Z	G	201.1	68.4	2.94	Grey, shiny, flat
	H	85.1	39.8	2.14	Brown, sandy feel, flat
	I	110.2	47.3	2.33	Dark grey, flaky, flat

- 44) Which statement is an inference rather than an observation?
- A) Rock *E* has a volume of  $33.1 \text{ cm}^3$ .  
 B) Rock *G* is the same color as rock *I*.  
 C) Rock *B* has been rounded by stream action.  
 D) Rock *H* is flat.
- 45) The approximate density of rock sample *D* is
- A)  $3.75 \text{ g/cm}^3$                       C)  $2.75 \text{ g/cm}^3$   
 B)  $3.32 \text{ g/cm}^3$                       D)  $2.67 \text{ g/cm}^3$
- 46) The student broke rock *G* into two pieces. Compared to the density of the original rock, the density of one piece would most likely be
- A) greater  
 B) less  
 C) the same
- 47) The diagram below shows air movements associated with cumulus cloud formation over a lake during a summer day. *A*, *B*, *C*, and *D* are reference points.



Point *D* is 10 kilometers above the Earth's surface. In which layer of the atmosphere is point *D* located?

- A) upper stratosphere              B) lower stratosphere              C) lower mesosphere              D) upper troposphere

Questions 48 through 50 refer to the following:

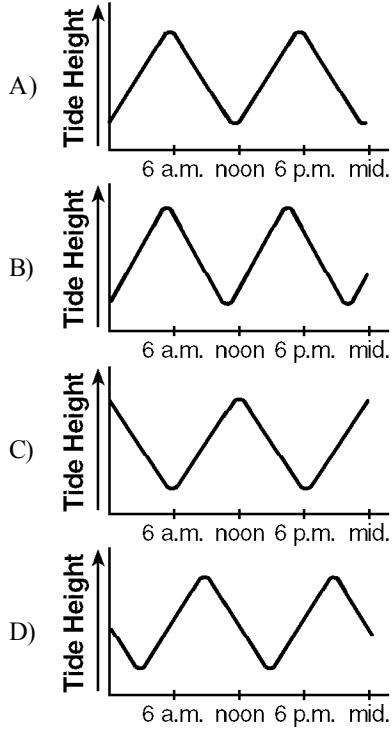
The Bay of Fundy, located on the east coast of Canada, has the highest ocean tides in the world. The St. John River enters the Bay of Fundy at the city of St. John, where the river actually reverses direction twice a day at high tides. Data for the famous Reversing Falls of the St. John River are given below for high and low tides on June 26 through 28, 1994.

**Tidal Record for Reversing Falls, St. John River**

Date	Time of First High Tide	Time of First Low Tide	Time of Second High Tide	Time of Second Low Tide
June 26	2:25 a.m.	8:45 a.m.	2:55 p.m.	9:05 p.m.
June 27	3:15 a.m.	9:35 a.m.	3:45 p.m.	9:55 p.m.
June 28	4:05 a.m.	10:25 a.m.	4:35 p.m.	10:45 p.m.

- 48) Compared to the first high tide on June 26, how much later in the day did the first high tide occur on June 27?
- A) 10 min                                  C) 50 min  
 B) 5 h 40 min                              D) 1 h 10 min

49) Which graph *best* represents the tides recorded on June 28?



50) Tides in the Bay of Fundy are *best* described as

- A) predictable and cyclic
- B) unpredictable and noncyclic
- C) unpredictable and cyclic
- D) predictable and noncyclic