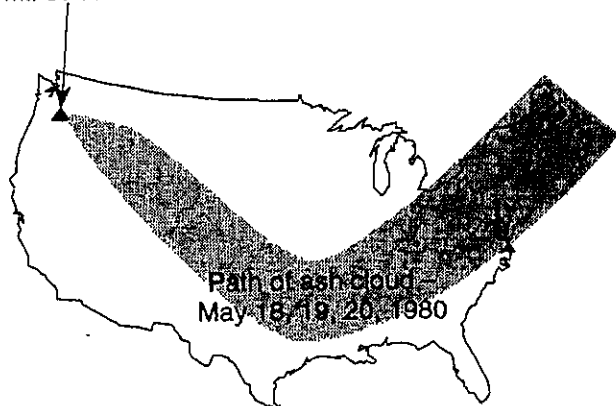


Name: _____

Date: _____

1. In order to make observations, an observer must always use
- A) experiments
 - B) the senses
 - C) proportions
 - D) mathematical calculations
2. The map below shows the path of an ash cloud that resulted from the Mount St. Helens volcanic eruption. The map was developed from satellite photographs.

Mt. St. Helens



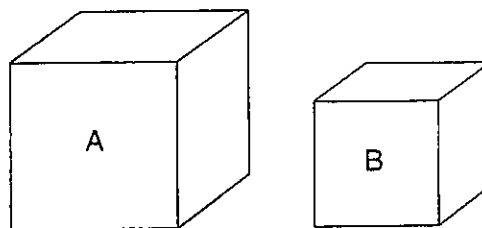
The path of the ash cloud was most probably determined by

- A) hypothesis
 - B) inference
 - C) theory
 - D) observation
3. Which statement about a major hurricane is an inference?
- A) The windspeed is measured at 200 km/hr.
 - B) The central air pressure is recorded at 946.0 mb.
 - C) A rain gauge records three inches of rain in less than one hour.
 - D) Damage from the storm is expected to be extensive.
4. Which procedure is an example of classifying observed data?
- A) grouping stars by brightness
 - B) graphing temperature versus time for a particular date
 - C) photographing the cloud cover for a location throughout 1 week
 - D) measuring the angle of *Polaris* from two different locations

5. The diameter through the equator of Jupiter is about 143,000 kilometers. What is this distance written in scientific notation (powers of 10)?

- A) 143×10^2 km
- B) 1.43×10^3 km
- C) 1.43×10^5 km
- D) 143×10^5 km

6. Base your answer to the following question on the diagrams below, which represent two different solid, uniform materials cut into cubes *A* and *B*.

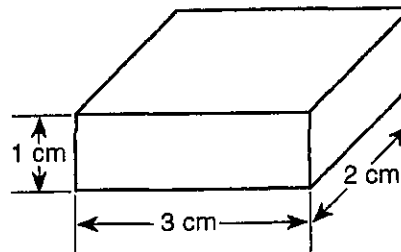


Mass of *A* = 320 g Density of *B* = 3 g/cm³
Volume of *A* = 64 cm³ Volume of *B* = 27 cm³

(Not drawn to scale)

What is the mass of cube *B*?

- A) 9 g
 - B) 27 g
 - C) 3 g
 - D) 81 g
7. Under the same conditions of temperature and pressure, three different samples of the same uniform substance will have the same
- A) shape
 - B) density
 - C) mass
 - D) volume
8. The diagram below represents a solid object with a density of 3 grams per cubic centimeter.



(Not drawn to scale)

What is the mass of this object?

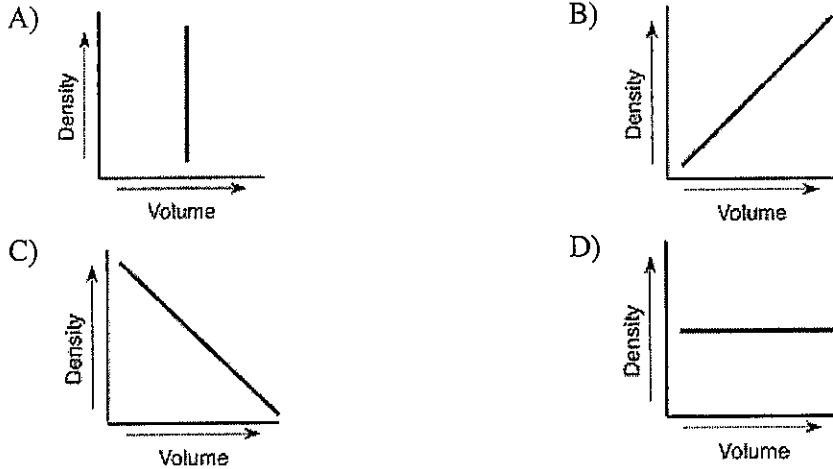
- A) 0.5 g
- B) 2 g
- C) 18 g
- D) 36 g

9. The data table below shows the mass and volume of three samples of the same mineral. [The density column is provided for student use.]

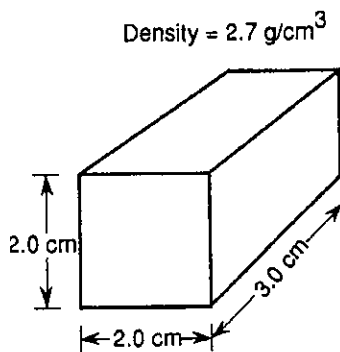
Data Table

Sample	Mass (g)	Volume (cm ³)	Density (g/cm ³)
A	50	25	
B	100	50	
C	150	75	

Which graph best represents the relationship between the density and the volume of these mineral samples?

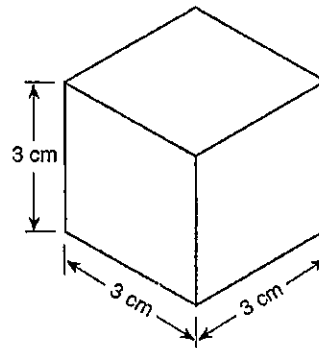


Base your answers to questions 10 and 11 on the diagram below, which represents a solid material of uniform composition.



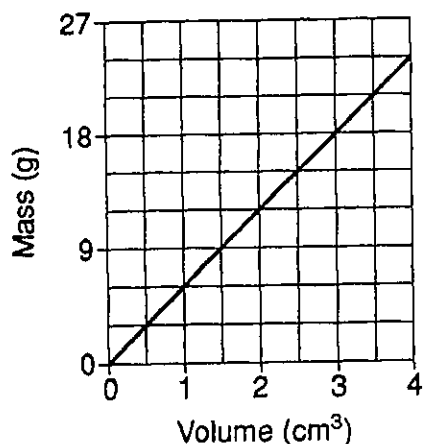
10. If this material is heated and expands, the density of the material will
- A) decrease B) increase
 C) remain the same
11. The mass of this piece of material is approximately
- A) 0.23 g B) 4.4 g
 C) 9.3 g D) 32 g

12. The mineral shown below is of uniform composition and has a density of 4 grams per cubic centimeter. What is the mass of this mineral?



- A) 9 g B) 12 g
 C) 54 g D) 108 g
13. As air on the surface of Earth warms, the density of the air
- A) decreases B) increases
 C) remains the same
14. A student is asked to classify several rocks. For best results, the classification should be based on
- A) inferences B) interpretations
 C) hypotheses D) observations

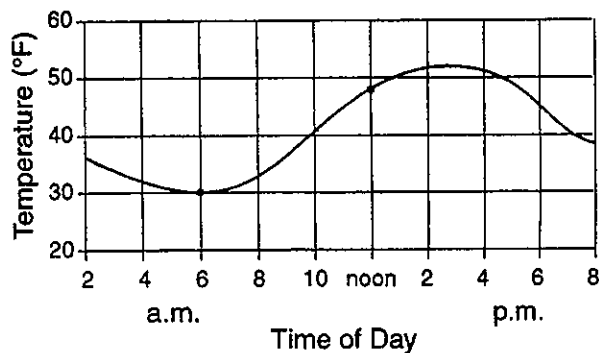
15. The graph below shows the relationship between the mass and volume of a mineral.



What is the density of this mineral?

- A) 6.0 g/cm³ B) 9.0 g/cm³
 C) 3.0 g/cm³ D) 4.5 g/cm³
16. Compared to the density of liquid water, the density of an ice cube is
- A) always less
 B) always greater
 C) always the same
 D) sometimes less and sometimes greater
17. Water has the greatest density at
- A) 100°C in the gaseous phase
 B) 0°C in the solid phase
 C) 4°C in the solid phase
 D) 4°C in the liquid phase
18. A 25-gram sample of halite was placed in a jar with five other mineral samples and water. The jar was shaken vigorously for 5 minutes. The halite sample was then found to have a mass of 15 grams. What was the rate of weathering of the halite sample?
- A) 0.50 g/min B) 2.0 g/min
 C) 3.0 g/min D) 10. g/min
19. Ocean tides are best described as
- A) unpredictable and cyclic
 B) unpredictable and noncyclic
 C) predictable and cyclic
 D) predictable and noncyclic

20. The graph below shows temperature readings for a day in April.

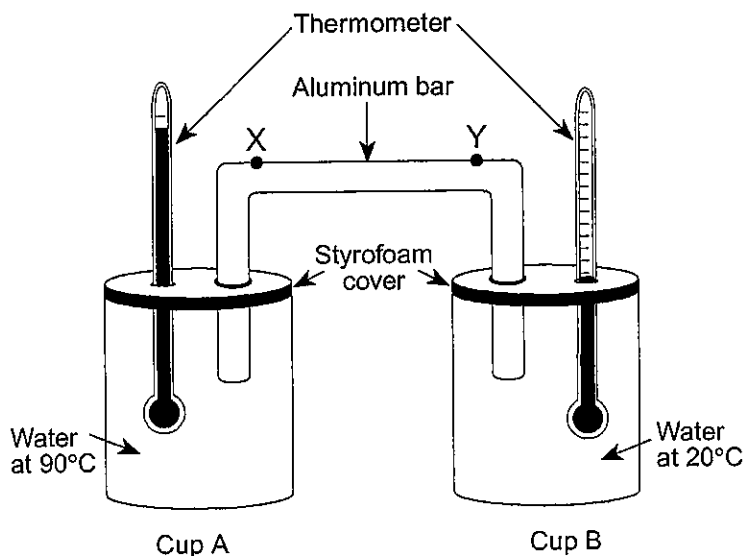


The average rate of temperature change, in Fahrenheit degrees per hour, between 6 a.m. and noon was

- A) 6°/hr B) 8°/hr
 C) 3°/hr D) 18°/hr
21. Which event is most predictable?
- A) The Sun rises.
 B) An earthquake occurs.
 C) A meteorite falls to Earth.
 D) Coral fossils are found on mountaintops.
22. The graph below shows the changes in height of ocean water over the course of 2 days at one Earth location.
-
- Which statement concerning these changes is best supported by the graph?
- A) The changes are cyclic and occur at predictable time intervals.
 B) The changes are cyclic and occur at the same time every day.
 C) The changes are noncyclic and occur at sunrise and sunset.
 D) The changes are noncyclic and may occur at any time.
23. A centimeter is 0.01 meter. This measurement can also be expressed as
- A) 1×10^{-1} m B) 1×10^{-2} m
 C) 1×10^0 m D) 1×10^2 m

24. Base your answer to the following question on the information about a laboratory procedure, diagram, and data table below.

Hot water at 90°C is poured into cup *A*. Cool water at 20°C is poured into cup *B*. Styrofoam covers are placed on the cups. An aluminum bar and a thermometer are placed through holes in each cover. Points *X* and *Y* are locations on the aluminum bar. The data table shows temperature readings taken every minute for 20 minutes.



	Temperature of Water ($^{\circ}\text{C}$)	
Minute	Cup A	Cup B
0	90	20
1	88	20
2	86	20
3	85	21
4	83	21
5	82	22
6	81	22
7	80	22
8	79	22
9	78	23
10	77	23
11	76	23
12	75	23
13	74	23
14	73	23
15	72	24
16	71	24
17	70	24
18	69	24
19	68	25
20	67	25

The rate of temperature change for the water in cup *A* for the first 10 minutes was approximately

- A) $0.77^{\circ}\text{C}/\text{min}$ B) $1.3^{\circ}\text{C}/\text{min}$ C) $7.7^{\circ}\text{C}/\text{min}$ D) $13.0^{\circ}\text{C}/\text{min}$

25. A student recorded the times of three successive high tides at one location as:

9:12 a.m.
9:38 p.m.
10:04 a.m.

What is the approximate time of the next high tide?

- A) 10:12 p.m. B) 10:30 p.m.
C) 10:38 p.m. D) 11:04 p.m.

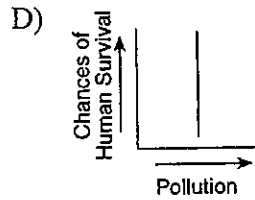
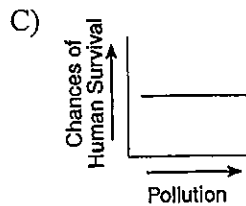
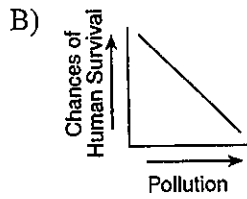
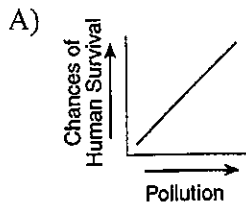
26. Which action can be performed most accurately using only the human senses?

- A) tearing a sheet of paper into squares whose sides measure 1 centimeter
B) adding 10 grams of salt to a cup of water
C) measuring the air pressure of a room
D) counting 28 shells from a beach

27. Which term is best defined as a measure of the amount of space a substance occupies?

- A) mass B) volume
C) density D) weight

28. Which graph shows the most probable effect of environmental pollution on the chances of human survival?



29. A group of students observed and measured various characteristics of a stream for one day. Which statement about the stream is most likely an inference?

- A) The stream water is dark brown.
- B) The water level of the stream will rise after the next rainfall.
- C) The velocity of the stream is greatest near the outside of a meander.
- D) The stream's depth is different at various distances from the streambank.

30. Which statement best illustrates a classification system?

- A) A glacier melts at the rate of one meter per year.
- B) Ocean depths are measured by using sonar.
- C) Snowfall predictions for winter storms vary.
- D) Stars are grouped according to their color.

