

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

Date: \_\_\_\_\_ Period: \_\_\_\_\_

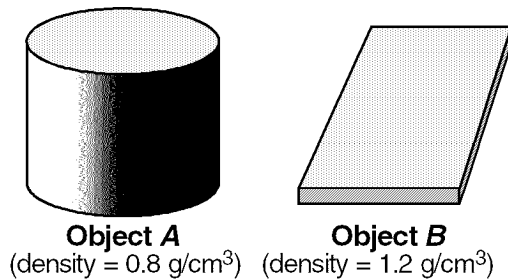
Foundations

Earth Science

# Foundations Practice Exam

- 1) A student classifies several objects. The classification system should be based on
- 1) hypotheses
  - 2) observations
  - 3) interpretations
  - 4) inferences
- 2) The primary purpose of a classification system is to enable people to
- 1) organize observations in a meaningful way
  - 2) extend their powers of observation
  - 3) make measurements that are very accurate
  - 4) eliminate inaccurate inferences
- 3) A centimeter is 0.01 meter. This measurement can also be expressed as
- 1)  $1 \times 10^2$  m
  - 2)  $1 \times 10^{-1}$  m
  - 3)  $1 \times 10^{-2}$  m
  - 4)  $1 \times 10^2$  m
- 4) The circumference of the Earth is about  $4.0 \times 10^4$  kilometers. This value is equal to
- 1) 400 km
  - 2) 40,000 km
  - 3) 400,000 km
  - 4) 4,000 km
- 5) Which one of the following statements about a mineral sample found in a field in New York State is most likely an inference?
- 1) The sample is white in color.
  - 2) The sample is rectangular, with sharp, angular corners.
  - 3) The sample is 8 cm long, 5 cm wide, and 3 cm high.
  - 4) The sample was transported by a glacier.
- 6) Which one of the following statements made during a weather report is most likely an inference?
- 1) The current barometric pressure is 29.97 in.
  - 2) The high temperature for the day was recorded at 2 p.m.
  - 3) Hot and humid conditions will continue throughout the week.
  - 4) The record low temperature for this date was set in 1957.
- 7) A pebble has a mass of 35 grams and a volume of 14 cubic centimeters. What is its density?
- 1)  $2.5 \text{ g/cm}^3$
  - 2)  $4.0 \text{ g/cm}^3$
  - 3)  $490 \text{ g/cm}^3$
  - 4)  $0.4 \text{ g/cm}^3$
- 8) A mineral sample is found to have a density of 3.0 grams per cubic centimeter. It is then broken into two pieces, with one piece twice as large as the other. The *smaller* of the two pieces will have a density of
- 1)  $1.0 \text{ g/cm}^3$
  - 2)  $1.5 \text{ g/cm}^3$
  - 3)  $6.0 \text{ g/cm}^3$
  - 4)  $3.0 \text{ g/cm}^3$
- 9) Water has the *greatest* density at
- 1)  $4^\circ\text{C}$  in the liquid phase
  - 2)  $0^\circ\text{C}$  in the solid phase
  - 3)  $4^\circ\text{C}$  in the solid phase
  - 4)  $100^\circ\text{C}$  in the gaseous phase

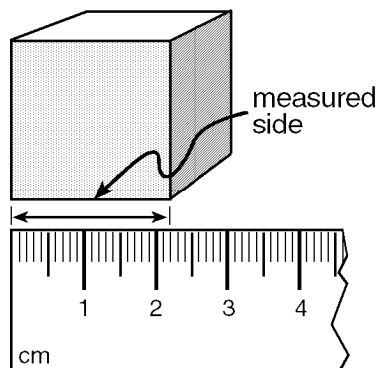
10) The diagrams below represent two solid objects, A and B, with different densities.



What will happen when the objects are placed in a container of water (water temperature = 4°C)?

- 1) Both objects will sink.
- 2) Both objects will float.
- 3) Object A will float, and object B will sink.
- 4) Object B will float, and object A will sink.

11) If each side of the cube shown below has the same length as the measured side, what is the approximate volume of the cube?



- 1) 10.65 cm<sup>3</sup>
- 2) 4.84 cm<sup>3</sup>
- 3) 2.20 cm<sup>3</sup>
- 4) 6.60 cm<sup>3</sup>

12) The data table below shows the density of four different mineral samples.

DATA TABLE:

Mineral	Density (g/cm <sup>3</sup> )
corundum	4.0
galena	7.6
hematite	5.3
quartz	2.7

A student accurately measured the mass of a sample of one of the four minerals to be 294.4 grams and its volume to be 73.6 cm<sup>3</sup>. Which mineral sample did the student measure?

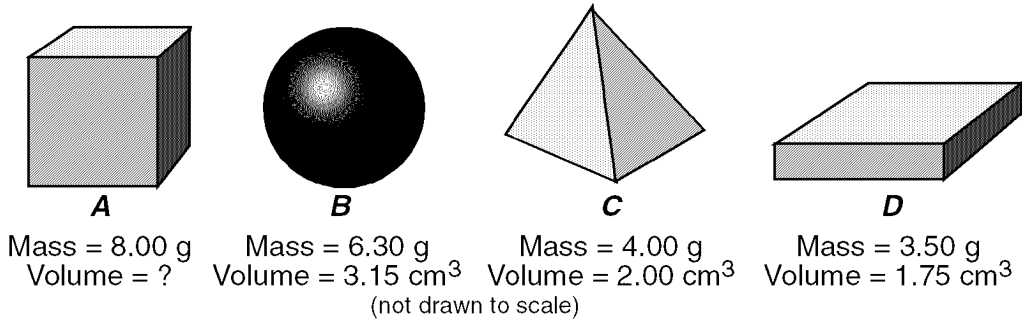
- 1) corundum
- 2) galena
- 3) hematite
- 4) quartz

13) The *best* example of a noncyclic event is

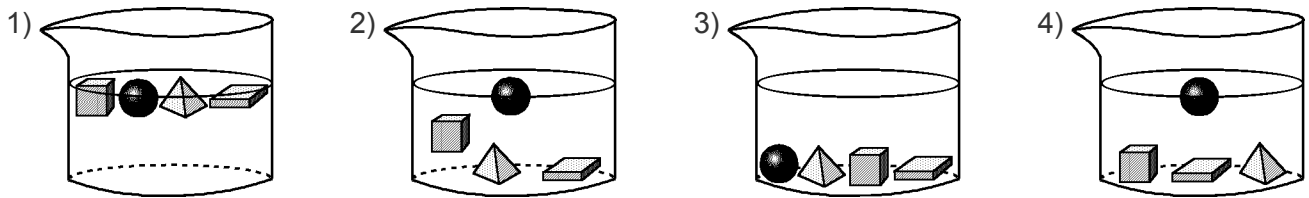
- 1) a phase change of the Moon
- 2) a volcanic eruption
- 3) an apparent star movement
- 4) a change of seasons

**Questions 14 through 16 refer to the following:**

The diagrams below represent four solid objects made of the same uniform material. The accepted values for the volume and mass of each object are given, except for the volume of object A.



14) Which diagram *best* shows what would happen if the four objects were placed in a large beaker of water at room temperature?



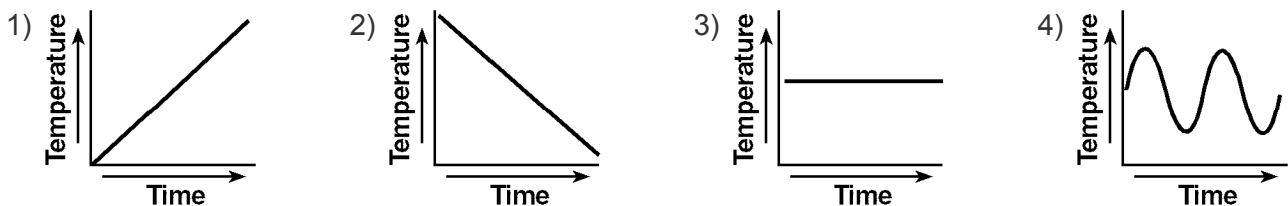
15) What is the volume of object A?

- 1) 1.00 cm<sup>3</sup>                      2) 2.00 cm<sup>3</sup>                      3) 8.00 cm<sup>3</sup>                      4) 4.00 cm<sup>3</sup>

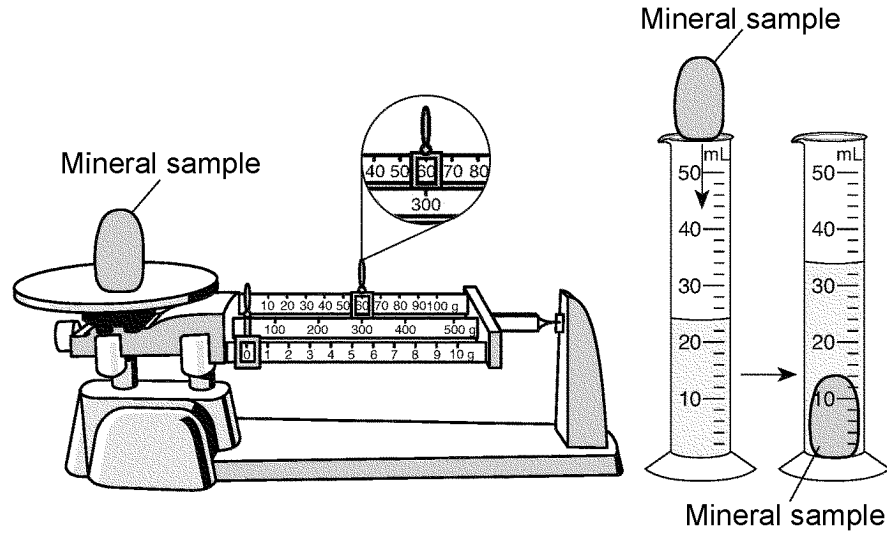
16) A sample having a volume of 1 cubic centimeter was cut from each object. Which is an accurate statement about the samples?

- 1) The sample from object D has the greatest density.
- 2) Each sample has the same mass.
- 3) Each sample has the same shape.
- 4) The sample from object B has the greatest volume.

17) Which graph most likely illustrates a cyclic change?



- 18) The diagram below represents the mass and volume of a mineral sample being measured. These measurements were used to determine the density of the mineral sample.



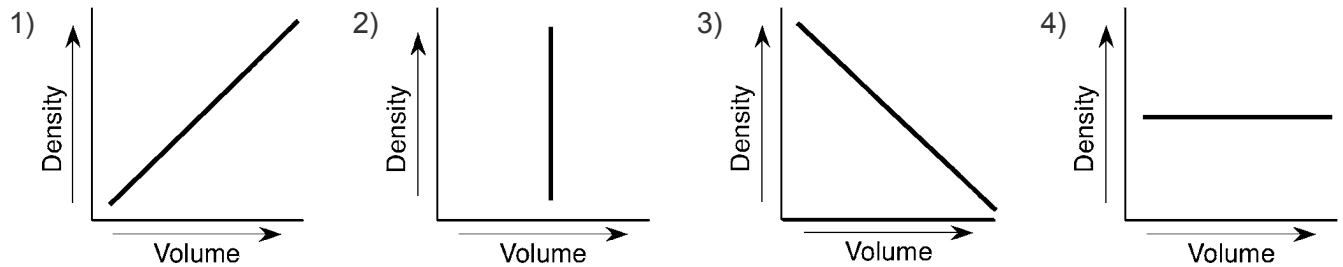
What is the density of this mineral sample?

- 1) 24 g/mL                      2) 60 g/mL                      3) 34 g/mL                      4) 6 g/mL
- 19) What is the approximate density of a mineral with a mass of 262.2 grams that displaces 46 cubic centimeters of water?
- 1) 5.7 g/cm<sup>3</sup>                      2) 6.1 g/cm<sup>3</sup>                      3) 12.2 g/cm<sup>3</sup>                      4) 1.8 g/cm<sup>3</sup>
- 20) The data table below shows the mass and volume of three samples of the same mineral. [The density column is provided for student use.]

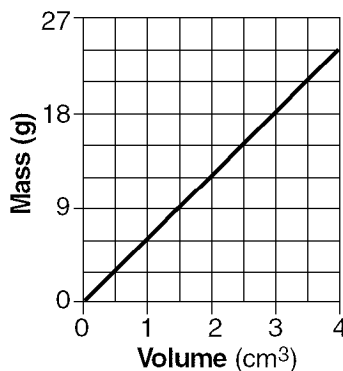
**Data Table**

Sample	Mass (g)	Volume (cm <sup>3</sup> )	Density (g/cm <sup>3</sup> )
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?



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



What is the density of this mineral?

- 1) 9.0 g/cm<sup>3</sup>                      2) 6.0 g/cm<sup>3</sup>                      3) 30 g/cm<sup>3</sup>                      4) 4.5 g/cm<sup>3</sup>

Questions 22 through 25 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
<i>X</i>	<i>A</i>	82.9	34.4	2.41	Grey, smooth, rounded
	<i>B</i>	114.2	42.6	2.68	Brown, smooth, rounded
	<i>C</i>	144.7	63.2	2.29	Black, smooth rounded
<i>Y</i>	<i>D</i>	159.4	59.7		Black and grey crystals, angular
	<i>E</i>	87.7	33.1	2.65	Clear and pink crystals, angular
	<i>F</i>	59.6	21.0	2.84	White, grey, and black crystals, angular
<i>Z</i>	<i>G</i>	201.1	68.4	2.94	Grey, shiny, flat
	<i>H</i>	85.1	39.8	2.14	Brown, sandy feel, flat
	<i>I</i>	110.2	47.3	2.33	Dark grey, flaky, flat

22) The approximate density of rock sample *D* is

- 1) 2.67 g/cm<sup>3</sup>                      2) 3.75 g/cm<sup>3</sup>                      3) 3.32 g/cm<sup>3</sup>                      4) 2.75 g/cm<sup>3</sup>

23) 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

- 1) less                                      2) greater  
3) the same

24) Which one of the following statements is an inference rather than an observation?

- 1) Rock *E* has a volume of 33.1 cm<sup>3</sup>.                      2) Rock *B* has been rounded by stream action.  
3) Rock *G* is the same color as rock *I*.                      4) Rock *H* is flat.

25) To obtain the data recorded in the column labeled "Description," the student used

- 1) her senses                      2) an overflow can                      3) a triple-beam balance                      4) a calculator