Name: _____

1) The table below identifies four density groups.

Group	Density g/cm³
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   C) C
B) B   D) D

2) The diagram below represents a rectangular object with a mass of 450 grams. According to the *Earth Science Reference Tables*, what is the density of the object?


15cm   2cm   5cm

not drawn to scale
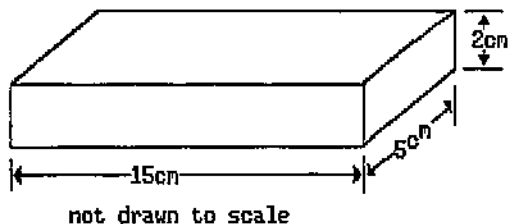
A) 4 grams per cubic centimeter
B) 1 gram per cubic centimeter
C) 3 grams per cubic centimeter
D) 2 grams per cubic centimeter

3) 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

A) 6.0 g/cm³
B) 3.0 g/cm³
C) 1.5 g/cm³
D) 1.0 g/cm³

4) The diagrams below represent two solid objects, A and B, with different densities.
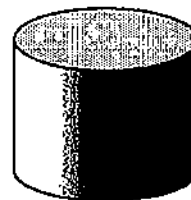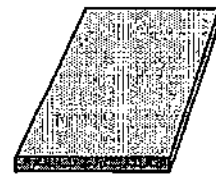
Object A   Object B
(density = 0.8 g/cm³)   (density = 1.2 g/cm³)

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

A) Object A will float, and object B will sink.
B) Both objects will float.
C) Object B will float, and object A will sink.
D) Both objects will sink.

5) 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) 1.6 g
B) 10.0 g   D) 6.2 g

Questions 6 through 10 refer to the following:

The diagram below represents a solid material of uniform composition.

Density = 2.7 g/cm^3

2.0 cm

3.0 cm

2.0 cm
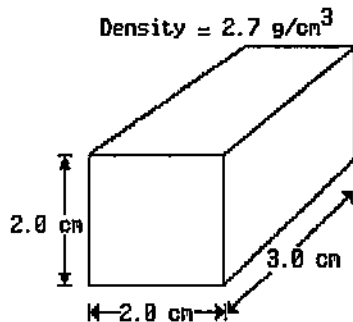
6) Which statement about this object is an inference?

A) the object has flat sides.
B) The object has sharp corners.
C) The object is made of a naturally occurring substance.
D) The object is longer than it is wide.

7) The mass of this piece of material is approximately

A) 32 g   C) 4.4 g
B) 0.23 g   D) 9.3 g

8) When this material is placed in a container of water, it sinks to the bottom of the container. Compared to the density of water, the density of the material is

A) less
B) the same
C) greater

9) Which graph best represents the relationship between the mass and volume of various-sized pieces of this material?

A) MASS / VOLUME

B) MASS / VOLUME

C) MASS / VOLUME

D) MASS / VOLUME
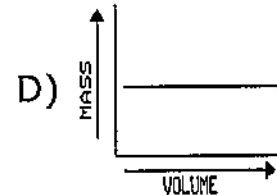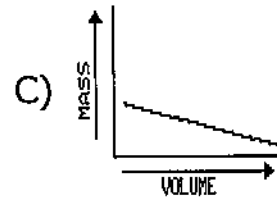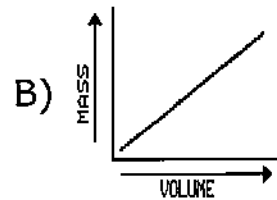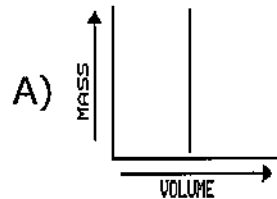
10) If this material is heated and expands, the density of the material will

A) remain the same
B) decrease
C) increase

11) A mineral expands when heated. Which graph best represents the relationship between change in density and change in temperature when that mineral is heated?

A)

C)

B)

D)
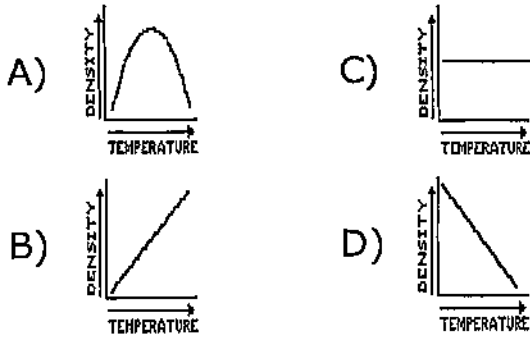
12) Water has its *greatest* density at a temperature of

A) 10°C C) 32°C
B) -6°C D) 4°C

13) An empty 250-milliliter beaker has a mass of 60 grams. When 100 milliliters of oil is added to the beaker, the total mass is 140 grams. The density of the oil is approximately

A) 1.7 g/ml
B) 0.8 g/ml
C) 0.6 g/ml
D) 1.4 g/ml

14) The graph below shows the relationship between mass and volume for three samples, *A*, *B*, and *C*, of a given material.
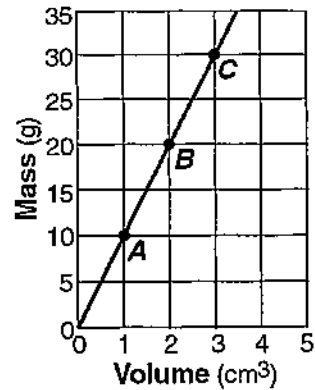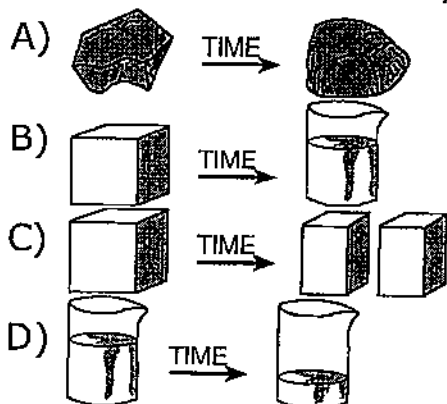

What is the density of this material?

A) 20.0 g/cm^3
B) 5.0 g/cm^3
C) 10.0 g/cm^3
D) 1.0 g/cm^3

15) Compared to the density of liquid water, the density of an ice cube is

A) always the same
B) always less
C) sometimes less and sometimes greater
D) always greater

16) The diagrams below show physical changes in four materials after a period of time. Chemical composition of each material remained the same. Which material most likely changed in density?

A) TIME

B) TIME

C) TIME

D) TIME

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

measured side
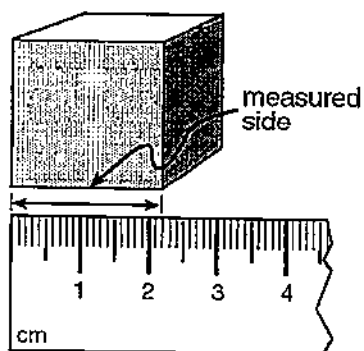
A) 4.84 cm3
B) 6.60 cm3
C) 2.20 cm3
D) 10.65 cm3

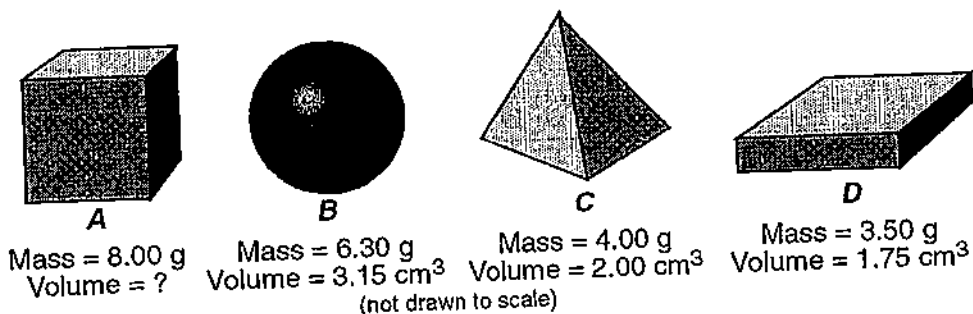18) What is the density of a rock which has a mass of 35 grams and a volume of 7.0 cubic centimeters?

A) 42 g/cm3
B) 0.20 g/cm3
C) 5.0 g/cm3
D) 28 g/cm3

19) A pebble has a mass of 35 grams and a volume of 14 cubic centimeters. What is its density?

A) 2.5 g/cm3
B) 0.4 g/cm3
C) 490 g/cm3
D) 4.0 g/cm3

Questions 20 through 22 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.

A
Mass = 8.00 g
Volume = ?

B
Mass = 6.30 g
Volume = 3.15 cm^3

C
Mass = 4.00 g
Volume = 2.00 cm^3

D
Mass = 3.50 g
Volume = 1.75 cm^3

(not drawn to scale)

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

A)

B)

C)

D)
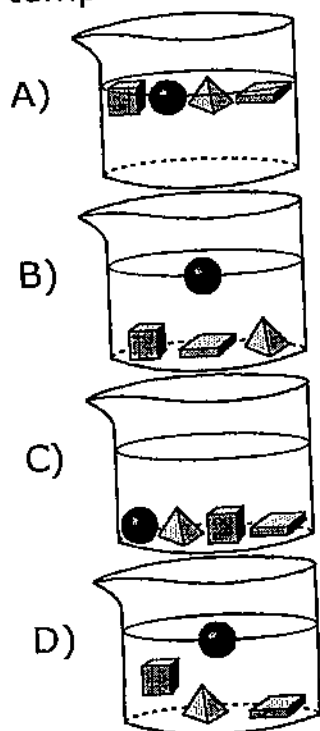
21) What is the volume of object A?

A) 2.00 cm^3
B) 4.00 cm^3
C) 8.00 cm^3
D) 1.00 cm^3

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

A) Each sample has the same mass.
B) The sample from object D has the greatest density.
C) Each sample has the same shape.
D) The sample from object B has the greatest volume.

NAME_____   Earth Science

The map below shows the path of a hurricane during the months of August into September. Each number represents where the center of the hurricane was at 3:00 p.m. on that day. There is a scale on the top right to help determine the speed of the hurricane

Hurricane Tracking Map
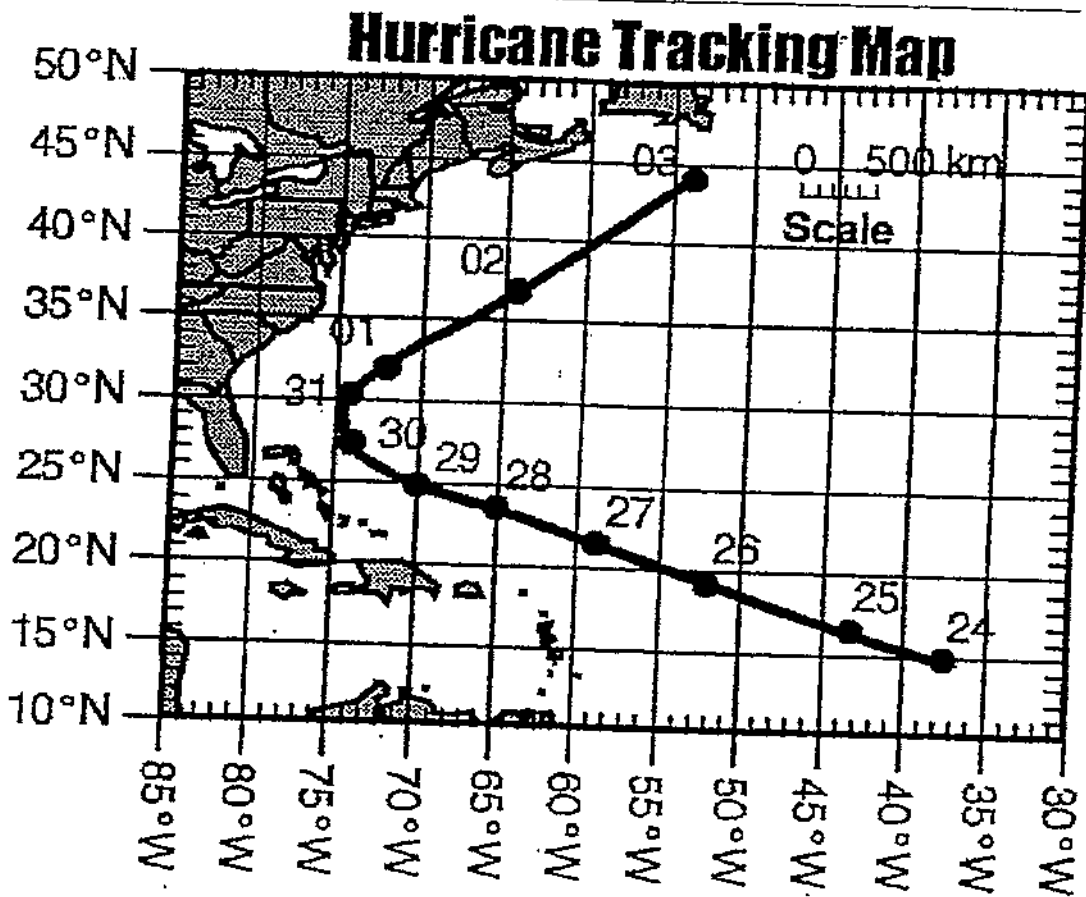
1. In the table below, calculate the rate of change (speed) of the hurricane from the 24th of August at 3:00 p.m. to the 26th of August at 3:00 p.m. Your answer will be expressed as: <u>kilometers</u> (kilometers per hour)
                                                                                              hour

A. Write the equation used to determine the rate of change (speed.)	
B. Plug in the data with proper units	
C. Solve with the proper units (round to the nearest whole number)	