SUPERVISED WORK 1

Exercise 1:

A density can be expressed as:

1. gL
2. $g.cm^{-3}$
3. $g.cm^{3}$
4. gL^{-1}

Exercise 2:

What are the possible definitions for the density of a liquid relative to water?

1. density of liquid / density of water
2. volume of a given mass of liquid / volume of the same mass of water
3. liquid mass / liquid volume
4. mass of a given volume of liquid / mass of the same volume of water

Exercise 3:

A piece of iron of 20cm3 weighs 152g. Calculate the density of iron in g.cm-3 then in gL^{-1} and in $kg.m^{-3}$.

Exercise 4:

Calculate the relative density of ethanol knowing that its volumetric mass is:

ρ(ethanol) =0.82 $g.cm^{-3}$

Exercise 5:

A volume of 1 L of alcohol weighs 789 g. We can say that alcohol is:

□ denser than water

□ less dense than water

Exercise 6:

Heptane is a solvent. To determine its density, pour 0.050L of heptane into a graduated cylinder, which is weighed on a precision balance; the measured mass is 94.35g. The graduated cylinder is weighed empty. A mass of 60.35g is then noted. 1) Calculate the density of heptane in g.cm- 3

2) Calculate the relative density of heptane.

Exercise 7:

The relative density of acetone is 0.79. Determine the mass of 30mL of acetone.

Exercise 8:

We want to make an object whose shape is a regular pyramid whose base will have an area of 100 cm^2 and whose height will be 6 cm. She also wants it to weigh at least 300g. **What should be the minimum value of the density of the material that we will use to make this object?**

Exercise 9

We weigh a volume of 50 mL of ethanol placed in a stoppered graduated flask (the balance will have been previously tared with the empty graduated flask and the stopper). The observed mass is equal to 41 g.

Exercise 10

(S) is a solid of mass M=4kg and volume V=4×10-3m 3 . Calculate the density ρ of (S).

Exercise 11

(S) is a solid of mass m=7.02g and volume V= 0.9cm3 . 1) Calculate the density ρ of (S) in g/cm3 then in kg/ m3 . 2) Use the table opposite to identify (S). 3) We immerse (S) in water. Compare ρ and ρ water . Conclude.

Exercise 12

To determine the density of copper, we take a piece (M) of copper in the shape of a block of dimensions (10cm;4cm;20mm) and mass M=0.712kg. (Take ρwater =1000kg/ m3) 1) Define the density of a body. 2) Calculate the density of copper. 3) Deduce the density d of copper.

Exercise 13

We take a quantity of oil with a density of 800kg/m3 and a mass m=1.6 tonnes.

1) Calculate the volume of the quantity of oil.

2) We immerse a solid with a density of 900kg/m3 in the oil. a) Compare the density of the oil to that of the solid. b) Draw a conclusion.

Exercise 14

(S) is a piece of ice with mass m1=3.6g and volume V= 4cm3 .

1) Calculate the density of the ice.

2) Deduce the density of the ice.

3) Take another piece of ice with unknown mass m2 and volume V= 5cm^3 . Calculate m2