الإدارة المركزية للتعليم العام
تنمية مادة العلوم

Physics

الصف الثاني الثانوي

2026-2027

الواجب المنزلي + التقييم

الأسبوع 7

الاسم: .....
الفصل: .....
المدرسة: .....



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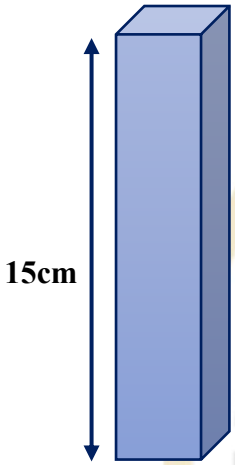
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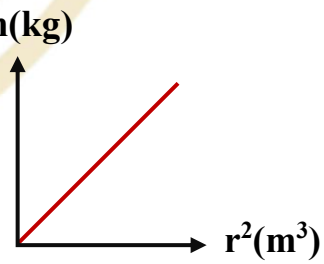
Chapter 4| Density

First: Multiple Choice Questions

1) **The graph shows four blocks, each made of glass with a density of 2.6 g/cm³. The base area of each block is 1 cm². Which shape has a mass of 13 g?**



2) **The graph shows the relationship between the mass (m) and the square of the base radius (r) for a number of solid copper cylinders all of which have the same height (h). The density of copper = …..**



(A) slope of the graph

(B) (slope of the graph)/(π h)

(C) (π h)/(slope of the graph)

(D) (slope graph)/(π^2 h)

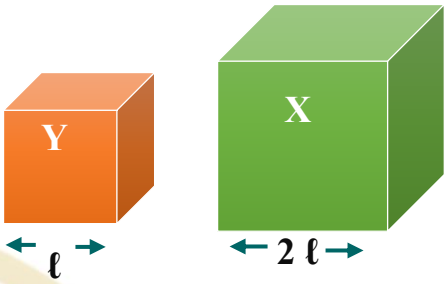
3) **In the figure, there are two cubes of different materials with the same mass. The relationship between the density of each of them is. .....**

(A) $\rho_y = 2\,\rho_x$

(B) $\rho_y = 4\,\rho_x$

(C) $\rho_y = 0.5\,\rho_x$

(D) $\rho_y = 8\,\rho_x$



4) **Two balls (A, B) The mass of ball (A) is three times the mass of ball (B), and its radius is equal to the diameter of ball (B). Then the ratio of the density of ball (A) to the density of ball (B) (ρ_A/ρ_B) is equal to:**

(A) 3/8

(B) 5/3

(C) 2/3

(D) 8/3

5) **When measuring the density of equal volumes of different blood samples, if the density of blood for a healthy person is 1060 kg/m^3 and the volume of the blood sample is 2.076 × 10^{-5} m^3, then the blood sample for a person with anemia is ….**

(A) (1)

(B) (2)

(C) (3)

(D) (4)

Sample	1	2	3	4
Mass (gm)	21	22	23	24

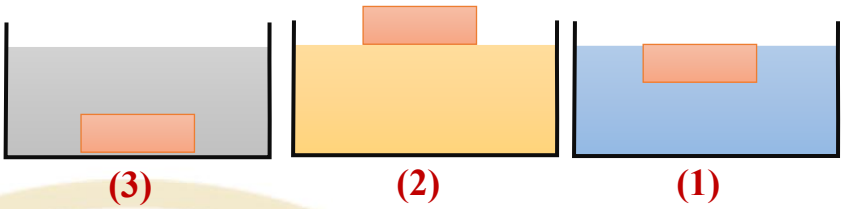
6) **Three identical copper cubes were placed inside three different liquids as shown in the figure. When calculating the density of each liquid, we get .....**

(A) $\rho_{(1)} > \rho_{(2)} > \rho_{(3)}$

(B) $\rho_{(3)} > \rho_{(1)} > \rho_{(2)}$

(C) $\rho_{(1)} > \rho_{(3)} > \rho_{(2)}$

(D) $\rho_{(2)} > \rho_{(1)} > \rho_{(3)}$



(3) (2) (1)

7) **The opposite figure represents four equal volumes of different objects 1, 2, 3, 4. Which object has the highest relative density?**

(A) (1)

(B) (2)

(C) (3)

(D) (4)



(1) (2) (3) (4)

8) **An empty container has a mass of 10 kg. When it was completely filled with water, its mass became 17 kg. Then it was emptied and filled with another liquid, so the mass of the container with the liquid became 20 kg . The relative density of the liquid is. .....**

(A) 1.34

(B) 1.71

(C) 1.22

(D) 1.43

9) **In the laboratory for testing the concentration of salts in urine, the results for four people were as follows. Which of the above people has increased salts in the urine?**

(A) Person (D)

(B) Person (B)

(C) Person (A)

(D) Person (C)

Person	A	B	C	D
$(Kg/m^3)\rho_{urine}$	1020	1030	1010	1019

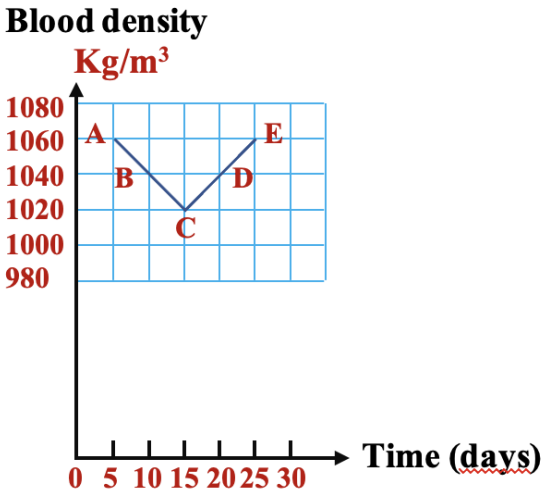
10) **The graph shows the variation in blood density of a person under normal observation over a period of 30 days. Which periods indicate that the person is suffering from anemia?"**

(A) AB, DE

(B) CD, BC

(C) AB, CD

(D) BC, DE



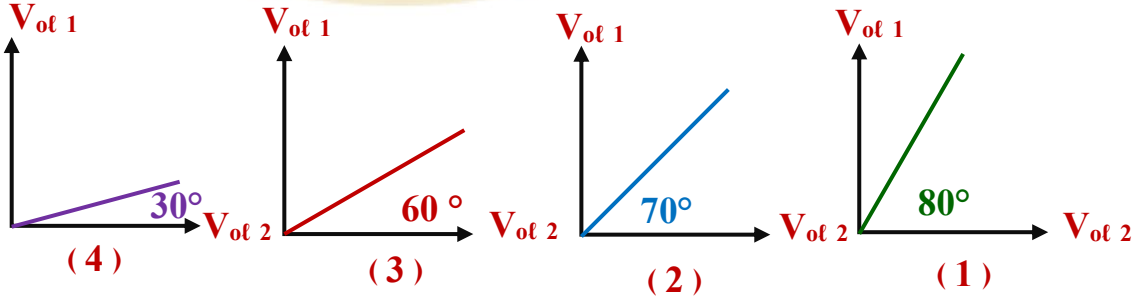
11) **You have four graphs that represent the relationship between the volumes of equal masses of different substances (V_{ol1}) and the volumes of the same masses of water (V_{ol2}). The substance with the highest relative density is.....**

(A) 1

(B) 2

(C) 3

(D) 4



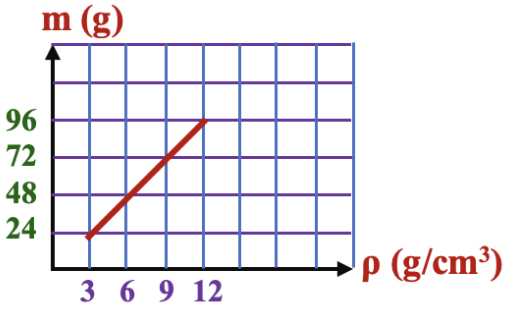
12) **The opposite graph: represents the relationship between mass and density for a number of different materials when the volume is constant. Which of the following graphs represents the volume of one of these materials?**

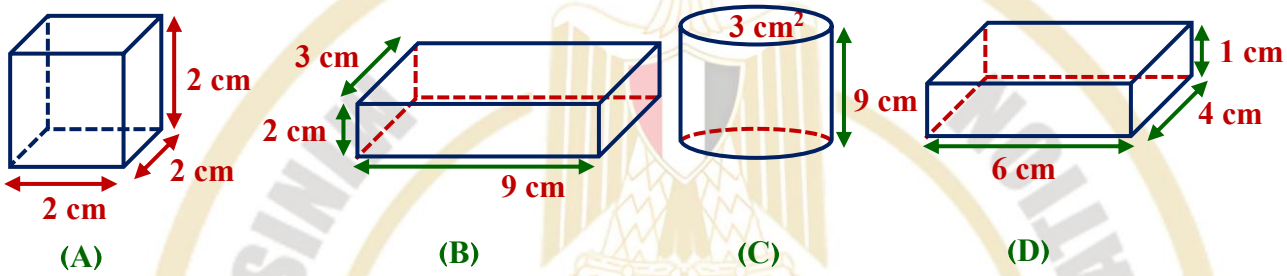
(A) A

(B) B

(C) C

(D) D





(A) (B) (C) (D)

Second: Essay Questions

13) **Calculate the density and relative density of aluminum if a volume of 0.1 m^3 has a mass of 270 kg.**

14) **A cylindrical aluminum container with a thick wall has a mass of 5 kg when empty. Its height is 30 cm and its inner radius is 20 cm. Calculate the mass of the oil that completely fills the container.**

Given that:

Density of aluminum = 2700 kg/m^3

Density of oil = 800 kg/m^3

– The end –

Chapter 4| Density

Group (A)

First: Multiple Choice Questions

1) The volume of 50 g of kerosene is 60.9 cm^3. the density and relative density are ..... , ... respectively.

(A) 0.82 g/cm^3 , 0.82

(B) 0.90 g/cm^3 , 0.9

(C) 1.00 g/cm^3 , 1

(D) 1.20 g/cm^3 , 1.2

2) A container has a mass of 10kg when empty. When filled with water, its total mass becomes 60kg, and when filled with oil, its total mass becomes 50kg.

Given that the density of water is 1000 kg/m^3, the relative density and density of the oil are:

(A) 0.8 and 800 kg/m^3

(B) 0.9 and 900 kg/m^3

(C) 0.7 and 700 kg/m^3

(E) 1.2 and1200 kg/m^3

3) Given that the density of copper = 8700 kg/m^3 and the density of water = 1000 kg/m^3, which of the following choices is correct?

	Relative density	Volume	Mass
(A)	8.7	200 cm^3	17.4 kg
(B)	8.7	20 cm^3	0.174 kg
(C)	0.87	2.0 cm^3	1740 kg
(D)	870	0.02 m^3	174 g

4) A cube has a side length of 20 cm and a mass of 76.8 kg.

Calculate the density and relative density of the cube, given that the density of water is 1000 kg/m^3.

(A) 9600 kg/m^3 and 9.6

(B) 900 kg/m^3 and 0.9

(C) 760 kg/m^3 and 0.76

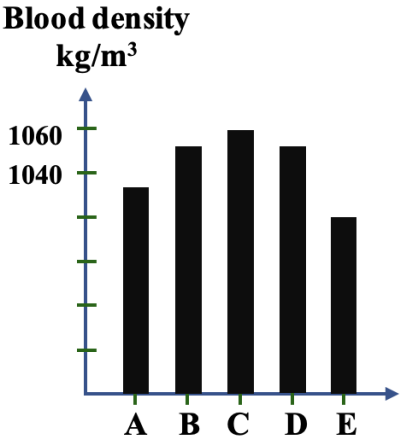
(D) 10,000 kg/m^3 and 10

Second: Essay Questions

5) The figure shows the blood density of a number of people (A, B, C, D, E). The following is true:

a) **The person who is least affected by anemia is .....**

b) **The person who is most affected by anemia is .....**



Group (B)

First: Multiple Choice Questions

1) Two equal volumes of iron and aluminum have a difference in mass of 12.75 kg.
If the ratio of their densities (iron: aluminum) is 26/9, the mass of each metal is:

(A) Iron = 19.5 kg and Aluminum = 6.75 kg

(B) Iron = 20.8 kg and Aluminum = 8.05 kg

(C) Iron = 26.0 kg and Aluminum = 13.25 kg

(D) Iron = 17.0 kg and Aluminum = 4.25 kg

2) A barrel can hold 90 kg of water or 60 kg of gasoline. If the density of water is 1000 kg/m^3, then the density and relative density of gasoline, are:

(A) 667 – 0.667 kg/m^3

(B) 0.667 – 667 kg/m^3

(C) 0.9 – 900 kg/m^3

(D) 0.6 – 600 kg/m^3

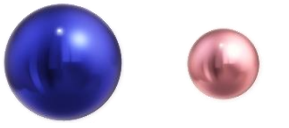
3) Two metallic spheres, the first has a radius (r) and density (ρ) and the second has a radius (2r) and density (2ρ). The ratio between their masses equals .....

(A) 1/4

(B) 1/2

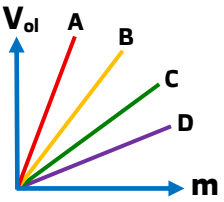
(C) 1/8

(D) 1/16



Ball (2) Ball (1)

4) The following graph shows the relationship between volume and mass for several solid pieces made of different materials. The correct relationship expressing the densities of the materials is:



(A) $\rho_A > \rho_B > \rho_C > \rho_D$

(B) $\rho_D > \rho_C > \rho_B > \rho_A$

(C) $\rho_A = \rho_B = \rho_C = \rho_D$

(D) $\rho_A = \rho_B > \rho_C = \rho_D$

Second: Essay Questions

5) A cube of iron has a side length of 12 cm and a mass of 7 kg. Given that the density of iron = 7800 kg/m^3, determine whether this cube is solid or contains cavities (air gaps).
Explain your answer.

Group (C)

1) An empty container has a mass of 190 g.
When filled with a liquid of relative density 0.81, the total mass of the container and the liquid becomes 400 g.
If the same container is filled with water (density = 1 g/cm^3), the total mass of the container and the water will be approximately:

(A) 299 g

(B) 349 g

(C) 399 g

(D) 449 g

2) The ratio of the density of the electrolyte solution in a car battery after the battery is discharged to its density after the battery is recharged is:

(A) Greater than one

(B) Less than one

(C) Equal to one

(D) May be greater or less than one

3) The following graph: shows the relationship between the masses of several pieces of a certain metal and their volumes.

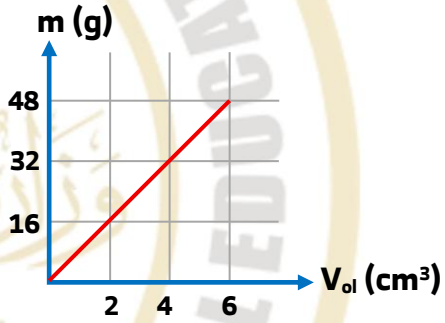
Given that the density of water = 1000 kg/m^3, the relative density of the metal equals:

(A) 8000

(B) 1000

(C) 8

(D) 1



4) Figure (1) shows a graduated cylinder containing a certain amount of water, while Figure (2) shows the same cylinder after adding a metal piece of mass 25 g.

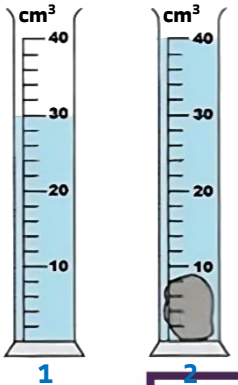
The density of the metal equals:

(A) 2500 g/cm^3

(B) 2.5 kg/m^3

(C) 2500 kg/m^3

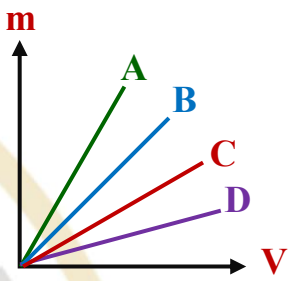
(D) 2.5 g/cm^3



Second: Essay Questions

5) The following graph shows the relationship between the mass and volume of a quantity of blood for four persons suffering from anemia.

Which of these persons has the highest level of anemia? Explain your answer.



- The end -