Density Worksheet

1) An object has a density of 10.00 g/mL. If the object has a volume of 25.00 mL, what is its mass?

2) A metal cylinder has a mass of 6.20 g. The density of the cylinder is 21.0 g/mL. What is its volume?

3) A rubber stopper has a mass of 4.27 g and a volume of 1.31 mL. What is its density?

4) A metal cylinder is placed in a graduated cylinder which has been filled with water to the 70.0 mL mark. The water level rises to the 78.0 mL mark.

(a) What is the volume of the metal cylinder?

(b) The cylinder has a density of 3.21 g/cm^3. What is its mass?

5) A gold cube is 150.00 mm long, 10.00 cm wide, and 0.95 m thick. If gold has a density of 19.3 g/cm^3, calculate the mass of the gold cube.

6) A rectangular fish tank is 60.00 cm long, 200.00 mm wide, and 200.00 m deep.

(a) What volume of water can it hold?

(b) What is the mass of the water?

Solutions

1) **D = M/V**

M = D x V = 10.00 g/~~mL~~ x 25.00 ~~mL~~ = 250.0 g

2) **D = M/V**

V = M/D = 6.20 ~~g~~/21.0 ~~g~~/mL = 0.295 mL

3) **D = M/V = 4.27 g/1.31 mL = 3.26 g/mL**

4) **(a)** **V = 78.0 mL – 70.0 mL = 8.0 mL**

(b) **D = M/V**

M = D x V = 3.21 g/~~cm~~^{3} x 8.0 ~~mL~~ x 1 ~~cm~~^{3}/1 ~~mL~~ = 26 g

5) **V = l x w x h**

V = 150.00 ~~mm~~ x 1cm/10 ~~mm~~ x 10.00 cm x 0.95 ~~m~~ x 100 cm/1 ~~m~~ = 1.4 x 10^{4} cm^{3}

D = M/V

M = D x V = 19.3 g/cm^{3} x 1.4 x 10^{4} cm^{3} = 2.7 x 10^{5} g

6) **(a)** **V = l x w x h**

V = 60.00 cm x 200.00 ~~mm~~ x 1 cm/10 ~~mm~~ x 200.00 ~~m~~ x 100 cm/~~m~~

V = 2.400 x 10^{7} cm^{3}

(b) **D = M/V**

M = D x V = 1.00 g/~~cm~~^{3} x 2.400 x 10^{7} ~~cm~~^{3} = 2.40 x 10^{7} g