

## CHEM UNIT 1 HW 4

①

$$1. \rho_{\text{sw}} = 1 \text{ g/ml} \quad \rho_{\text{sw}} = .917 \text{ g/ml} \quad V = 145 \text{ ml} \quad V_{\text{sw}} = ?$$

$$D = \frac{M}{V} \quad V \cdot D = M_{\text{sw}} = (145 \text{ ml} \times 1 \text{ g/ml}) = 145 \text{ g LIQ. WATER}$$

$$V = \frac{M}{D} \quad V_{\text{sw}} = \frac{145 \text{ g}}{.917 \text{ g/ml}} = \boxed{158.12 \text{ ml}}$$

$$158.12 \text{ ml} - 145 \text{ ml} = \boxed{13.12 \text{ ml DIFFERENCE}}$$

$$2. 25 \text{ LBS} = M \quad V = 1.62 \text{ QT} \quad D = ? \text{ g/cm}^3$$

$$\frac{(25 \text{ LBS}) (453.6 \text{ g})}{\text{LBS}} = 11340 \text{ g}$$

$$\frac{(1.62 \text{ QT}) (.946 \text{ L})}{\text{QT}} = 1.53252 \text{ L}$$

$$\frac{(1.53252 \text{ L}) (1000 \text{ ml})}{\text{L}} = 1532.52 \text{ ml} = 1532.52 \text{ cm}^3$$

$$\frac{11340 \text{ g}}{1532.52 \text{ cm}^3} = \boxed{7.3996 \text{ g/cm}^3 = 7.4 \text{ g/cm}^3}$$

$$3. M = 4.085 \text{ g} \quad r = 5.5 \text{ mm} = .55 \text{ cm} \quad V = \frac{4}{3} \pi r^3 \quad D = ? \text{ g/cm}^3$$

$$V = \frac{4}{3} \pi (.55 \text{ cm})^3 = .6969 \text{ cm}^3$$

$$D = \frac{M}{V} = \frac{4.085 \text{ g}}{.6969 \text{ cm}^3} = \boxed{5.86 \text{ g/cm}^3}$$

4.  $D_H = .791 \text{ g/ml}$      $M_G = 15000 \text{ g}$      $D_G = .690 \text{ g/ml}$     (3)

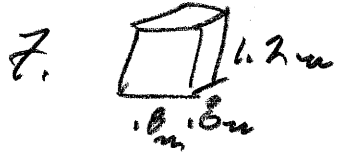
$$V_G = \frac{M}{D} = \frac{15000 \text{ g}}{.690 \text{ g/ml}} = 21739.130 \text{ ml} = V_G = V_M$$

$$V \cdot D = M = (21739.13 \text{ ml}) (.791 \text{ g/ml}) = \underline{17195.65 \text{ ml}}$$

5.  $M_{\text{anti}} = 54.573 - 48.462 = 6.051 \text{ g}$      $V_{\text{anti}} = 4 \text{ ml}$

$$D = \frac{M}{V} = \frac{6.051 \text{ g}}{4 \text{ ml}} = \underline{1.513 \text{ g/ml}}$$

6.



7.  $V_{\text{Box}} = (0.8\text{m})(0.8\text{m})(1.2\text{m}) = .768\text{ m}^3$  (3)

$M_{\text{PPM}} = 3200\text{g}$        $D = ?\text{ g/cm}^3$

$(.768\text{ m}^3) \left( \frac{1000000\text{ cm}^3}{\text{m}^3} \right) = 768000\text{ cm}^3$

$D = \frac{M}{V} = \frac{3200\text{g}}{768000\text{ cm}^3} = 0.0042\text{ g/cm}^3$

8.  $D_{\text{HCl}} = 12.8 \frac{\text{kg}}{\text{m}^3}$       N

Q. I. 100 LB POTATOES    II. 15 GAL  $H_2O$     III. 3 L  $Hg$

$$D_w = 1 \frac{g}{ml}$$

$$D_{Hg} = 13.534 \frac{g}{ml}$$

WHICH WEIGHS MORE?

$$II. (15 \text{ GAL}) (3.785 \text{ L}) = 56.775 \text{ L} = 56775 \text{ ml}$$

$$D \cdot V = M = (1 \frac{g}{ml}) (56775 \text{ ml}) = 56775 \text{ g} = M_{H_2O}$$

$$III. 3 \text{ L} = 3000 \text{ ml} \quad D \cdot V = M = (13.534 \frac{g}{ml}) (3000 \text{ ml}) \\ = 40602 \text{ g} = M_{Hg}$$

$$I (100 \text{ LBS}) \frac{(453.6 \text{ g})}{\text{LBS}} = 45360 \text{ g} = M_{POTATOES}$$

$\therefore$  15 GAL  $H_2O$  HEAVIEST TO HARDEST TO THROW INTO PICCET