

## PHAR 632

## Millimoles, mEq, Milliosmols

1- What is the concentration (\%) of solution containing $4 \mathrm{mEq} / \mathrm{L}$ of KCl ?
2- How many mEq of KCl are in 1.5 grams of KCl ?
3- How many milligrams of monobasic sodium phosphate $(\mathrm{MW}=138)$ are in 1 millimole?
4- Convert $20 \mathrm{mg} \%$ of $\mathrm{Ca}^{++}(\mathrm{MW}=40)$ to $\mathrm{mEq} / \mathrm{L}$ ?
5- How many mEq of $\mathrm{Na}^{+}$are present in 250 mL of $0.9 \% \mathrm{NaCl}$ solution? $(\mathrm{MW}=58.5 \mathrm{gram} / \mathrm{mole})$
6- What is the concentration in $\underline{\mathbf{m E q} / \mathbf{m l}}$ of solution containing $0.294 \mathrm{~g} / \mathrm{ml}$ of calcium chloride $\left(\mathrm{CaCl}_{2} .2 \mathrm{H}_{2} \mathrm{O}\right) ?(\mathrm{MW}=147)$

7- What is the concentration in $\underline{\boldsymbol{\%} \mathbf{w} / \mathbf{v}}$ of solution containing $2 \mathrm{mEq} / \mathrm{ml}$ of calcium chloride $\left(\mathrm{CaCl}_{2} \cdot 2 \mathrm{H}_{2} \mathrm{O}\right)$ ? $(\mathrm{MW}=147)$

8- .What is the concentration of a solution in $\underline{\mathbf{m E g} / \mathbf{1 0 0} \mathbf{~ m l}}$, if the solution contains $0.535 \% \mathrm{w} / \mathrm{v}$ of ammonium chloride $\left(\mathrm{NH}_{4} \mathrm{Cl}\right)$ ? $(\mathrm{MW}=53.5)$

9- . A solution contains $0.1 \mathrm{~g} / \mathrm{L}$ of $\mathrm{K}^{+}$ions. Express this concentration in terms of milliequivalents per liter? (MW of $\mathrm{K}^{+}=39$ )

10- A solution contains $10 \mathrm{mg} / 100 \mathrm{ml}$ of $\mathrm{Ca}^{++}$ions. Express this concentration in terms of milliequivalents per liter? $\left(\mathrm{MW}\right.$ of $\left.\mathrm{Ca}^{++}=40\right)$.

11- A solution contains 5 mEq of $\mathrm{Mg}^{++}$ions per liter. Express this concentration in terms of milligrams per liter? $\left(\mathrm{MW}\right.$ of $\left.\mathrm{Mg}^{++}=24\right)$.

12- How many mEq of magnesium sulfate are represented in 1 gram of anhydrous magnesium sulfate $\left(\mathrm{MgSO}_{4}\right)$ ? (MW of $\left.\mathrm{MgSO}_{4}=120\right)$.

13- A solution contains $2.5 \%$ of anhydrous dextrose in water for injection. How many milliosmoles per liter are represented by this concentration? (MW of anhydrous dextrose=180).

14- A solution contains $50 \mathrm{~g} / \mathrm{L}$ of anhydrous dextrose in water for injection. How many milliosmoles per liter are represented by this concentration? (MW of anhydrous dextrose=180).

15- A solution contains $2.78 \mathrm{mOsmol} / \mathrm{L}$ of anhydrous dextrose in water for injection. How many mg per liter are represented by this concentration? (MW of anhydrous dextrose $=180$ )

16- How many mOsmols are in a liter of a $0.9 \%$ sodium chloride solution? ( MW of $\mathrm{NaCl}=58.5$ )
17- What is the osmolarity of 250 mL of $9 \mathrm{~g} / \mathrm{L}$ sodium chloride solution? ( MW of $\mathrm{NaCl}=58.5$ ). Is there a difference in the osmolarity of 250 or 1000 mL of the same solution?

18- What is the concentration in milligrams $/ \mathrm{mL}$ of a solution containing 10 mEq of $\mathrm{KCl} / 5 \mathrm{~mL}$, MWt of KCl 74.5?

19- How many mEq/Liter are present in a solution containing $10 \mathrm{mg} \%$ of $\mathrm{CaCl}_{2}$ ions?
20-How many grams of magnesium chloride should be used to prepare 120 mL of a solution intended to contain 3 mEq of magnesium ion / 10 mL ( MWt 95)?

21- What is the percentage strength of 200 mOsmolar potassium chloride solution?
22-You prepared 10 mL of $10 \%$ solution of magnesium acetate $\left(\mathrm{C}_{4} \underline{H}_{6} \underline{M g O}_{4}\right)$ for a patient.
a. How many millimols, milliequivalents (of $\mathrm{Mg}^{+2}$ ) will the patient receive?
b. What is the \# mOsmol? (MWt 142)

23-Calculate the milliequivalents of sodium, potassium and chloride, the millimoles of dextrose and the osmolarity of the following parenteral solution:

Rx
Dextrose 50 g
Sodium Chloride 4.5 g
Potassium Chloride 1.49 g
SWFI ad 1000 mL
24- Calculate the number of mOsmols in a 700 mL of normal saline solution.
25- Calculate the number of $\mathrm{mOsm} / \mathrm{L}$ in a solution of $5 \%$ dextrose ( M Wt 198 ) and $0.2 \%$ sodium chloride.

