

Molarity Madness #3

1. Which beaker described below contains the greatest number of moles of Ca^{2+} ?

Beaker A: 150 mL of 0.10 M CaCl_2

Beaker B: 120 mL of 0.20 M $\text{Ca}(\text{NO}_3)_2$

Beaker C: 24 grams of solid $\text{CaCl}_2 \cdot 2\text{H}_2\text{O}$ dissolved in 500 mL of tap water

2. What is the molarity of a solution if 132 grams of KNO_3 is dissolved into 0.650 Liters of water?

$[\text{K}^{1+}]$ _____

$[\text{NO}_3^{1-}]$ _____

3. What is the final molarity if 300 mL of 1.2 M HCl is diluted to a final volume of 600 mL?

$[\text{HCl}]$ _____

4. A 150 mL sample of 0.10 M $\text{Pb}(\text{NO}_3)_2$ solution is added to 360 mL of 0.15 M NaI solution. What are the concentrations of the ions remaining dissolved in solution?

$[\text{Pb}^{2+}]$ _____

$[\text{NO}_3^{1-}]$ _____

$[\text{Na}^{1+}]$ _____

$[\text{I}^{1-}]$ _____

5. A person seeks to prepare 750. mL of 0.300 M CuSO_4 solution from the solid hydrate, $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$. How many grams of the hydrate should be added to prepare the desired solution?

6. If 15 grams of KCl is mixed with 350 mL of water containing 80 grams of K_2SO_4 , what are the final concentrations of the ions?

$[\text{K}^{1+}]$ _____

$[\text{Cl}^{1-}]$ _____

$[\text{SO}_4^{2-}]$ _____

7. A 160 mL sample of 0.10 M $\text{Ca}(\text{NO}_3)_2$ solution is added to 90 mL of 0.20 M Na_2CO_3 solution. What are the final concentrations of the ions that remain dissolved in solution?

$[\text{Ca}^{2+}]$ _____

$[\text{NO}_3^{1-}]$ _____

$[\text{Na}^{1+}]$ _____

$[\text{CO}_3^{2-}]$ _____

8. What is the final molarity if 155 grams of $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ is dissolved to prepare 850 mL of water?

$[\text{MgSO}_4]$ _____

Molarity Madness #3 (Bracken Answers)

1. Beaker A: 0.0150 moles Ca^{2+}
Beaker B: 0.024 moles Ca^{2+}
Beaker C: 0.163 moles Ca^{2+}
2. $[\text{K}^{1+}] = 2.02 \text{ M}$
 $[\text{NO}_3^{1-}] = 2.02 \text{ M}$
3. $[\text{HCl}] = 0.60 \text{ M}$
4. $[\text{Pb}^{2+}] = 0 \text{ M}$
 $[\text{NO}_3^{1-}] = 0.059 \text{ M}$
 $[\text{Na}^{1+}] = 0.11 \text{ M}$
 $[\text{I}^{1-}] = 0.047 \text{ M}$
5. 56.2 grams $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$
6. $[\text{K}^{1+}] = 3.2 \text{ M}$
 $[\text{Cl}^{1-}] = 0.57 \text{ M}$
 $[\text{SO}_4^{2-}] = 1.3 \text{ M}$
7. $[\text{Ca}^{2+}] = 0 \text{ M}$
 $[\text{NO}_3^{1-}] = 0.13 \text{ M}$
 $[\text{Na}^{1+}] = 0.14 \text{ M}$
 $[\text{CO}_3^{2-}] = 0.0080 \text{ M}$
8. $[\text{MgSO}_4] = 0.74 \text{ M}$

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