

## Quiz 15.1 – Molar Solubility

Name: \_\_\_\_\_

**Question 1**Use the  $K_{sp}$  values in Appendix J of your textbook to find the molar solubility of the following ionic compounds:

- MnS
- Mg(OH)<sub>2</sub>
- Ba<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>

**Question 2**Use the given molar solubilities to find the  $K_{sp}$  for the following ionic compounds (Do not use Appendix J!)

- CaSO<sub>4</sub>:  $7.02 \times 10^{-3} M$
- PbI<sub>2</sub>:  $1.35 \times 10^{-3} M$
- Al(OH)<sub>3</sub>:  $3.61 \times 10^{-9}$

**Question 3**

The smallest  $K_{SP}$  value I've found so far is for SnS<sub>2</sub>, with  $K_{sp} = 1 \times 10^{-70}$ . This is a phenomenally small value. Calculate the volume of water required to dissolve just 10 formula units of SnS<sub>2</sub>.

**Question 4**

CdF<sub>2</sub> has a relatively high solubility ( $K_{sp} = 6.44 \times 10^{-3}$ ). Calculate the molar solubility of CdF<sub>2</sub> in both pure water, and in a 0.5 M solution of NaF

*For All We Have and Are*

By Rudyard Kipling

1914

For all we have and are,  
For all our children's fate,  
Stand up and take the war.  
The Hun is at the gate!  
Our world has passed away,  
In wantonness o'erthrown.  
There is nothing left to-day  
But steel and fire and stone!  
Though all we knew depart,  
The old Commandments stand:—  
“In courage keep your heart,  
In strength lift up your hand.”

Once more we hear the word  
That sickened earth of old:—  
“No law except the Sword  
Unsheathed and uncontrolled.”  
Once more it knits mankind,  
Once more the nations go  
To meet and break and bind  
A crazed and driven foe.

Comfort, content, delight,  
The ages' slow-bought gain,  
They shrivelled in a night.  
Only ourselves remain  
To face the naked days  
In silent fortitude,  
Through perils and dismays  
Renewed and re-renewed.  
Though all we made depart,  
The old Commandments stand:—  
“In patience keep your heart,  
In strength lift up your hand.”

No easy hope or lies  
Shall bring us to our goal,  
But iron sacrifice  
Of body, will, and soul.  
There is but one task for all—  
One life for each to give.  
What stands if Freedom fall?  
Who dies if England live?