

## 12.08 Using Table J (Activity Series)

1. Which metal is more active than  $H_2$ ?  
A) Ag    B) Au    C) Cu    D) Pb
2. Which metal will spontaneously react with  $Zn^{2+}(aq)$ , but will *not* spontaneously react with  $Mg^{2+}(aq)$ ?  
A) Mn(s)                      B) Cu(s)  
C) Ni(s)                        D) Ba(s)
3. Which metal is more active than Ni and *less* active than Zn?  
A) Cu    B) Cr    C) Mg    D) Pb
4. Which metal reacts spontaneously with a solution containing zinc ions?  
A) magnesium                B) nickel  
C) copper                        D) silver
5. According to Reference Table J, which of these metals will react most readily with 1.0 M HCl to produce  $H_2(g)$ ?  
A) Ca    B) K    C) Mg    D) Zn
6. Which metal can replace Cr in  $Cr_2O_3$ ?  
A) nickel                        B) lead  
C) copper                        D) aluminum
7. According to Reference Table J, which of these ions is most easily reduced?  
A)  $Ca^{2+}$     B)  $Cr^{3+}$     C)  $Cu^+$     D)  $Ag^+$
8. According to Reference Table J, which metal will react with  $Zn^{2+}$  but will *not* react with  $Mg^{2+}$ ?  
A) Al(s)    B) Cu(s)    C) Ni(s)    D) Ba(s)
9. Based on Reference Table J, which metal will react spontaneously with  $Al^{3+}$ ?  
A) Co(s)    B) Cr(s)    C) Cu(s)    D) Ca(s)
10. Based on the Activity Series,, which ion will oxidize Pb to  $Pb^{2+}$ ?  
A)  $Cu^{2+}$     B)  $Ni^{2+}$     C)  $Fe^{2+}$     D)  $Zn^{2+}$
11. Based on the Activity Series, which ion will react spontaneously with Co(s)?  
A)  $Zn^{2+}$     B)  $Al^{3+}$     C)  $Li^+$     D)  $Ag^+$
12. Based on Reference Table J, which of the following elements will replace Pb from  $Pb(NO_3)_2(aq)$ ?  
A) Mg(s)                        B) Au(s)  
C) Cu(s)                        D) Ag(s)
13. According to Reference Table J, which element will react spontaneously with  $Al^{3+}$  at 298 K?  
A) Cu    B) Au    C) Li    D) Ni
14. Due to it having a low activity, which element can be found in nature in the free (uncombined) state?  
A) Ca    B) Ba    C) Au    D) Al
15. According to Reference Table J, which pair will react spontaneously at 298K?  
A)  $Cu + H_2O$                 B)  $Ag + H_2O$   
C)  $Ca + H_2O$                 D)  $Au + H_2O$
16. According to Reference Table J, which will reduce  $Mg^{2+}$  to Mg(s)?  
A) Fe(s)                        B) Ba(s)  
C) Pb(s)                        D) Ag(s)
17. According to Reference Table J, which atom-ion pair will react spontaneously?  
A)  $Ag + Au^{3+}$                 B)  $Pb + Co^{2+}$   
C)  $Ni + Al^{3+}$                 D)  $Zn + Ca^{2+}$
18. Which element below can be used to replace chromium from its compound  $Cr_2O_3$ ?  
A) Cu    B) Pb    C) Sn    D) Al
19. According to Reference Table J, which species can reduce  $Cr^{3+}$  ions?  
A)  $Fe^{2+}$     B)  $Sn^{2+}$     C) Al    D) Ni
20. According to Reference Table J, which metal will react with 1 M  $PbCl_2$ ?  
A) Au(s)                        B) Ag(s)  
C) Co(s)                        D) Cu(s)