**PCS 10 - Revision - Reaction Stoichiometry**

1. What mass of ZnCl2 can be prepared from the reaction of 3.27 grams of zinc with 3.30 grams of HCl?

Zn + 2HCl  ZnCl2 + H2

1. 6.89 g
2. 6.82 g
3. 6.46 g
4. 6.17 g
5. 6.02 g
6. How many grams of NH3 can be prepared from 77.3 grams of N2 and 14.2 grams of H2? (Hint: Write and balance the equation first.)
7. 93.9 g
8. 79.7 g
9. 47.0 g
10. 120.0 g
11. 13.3 g
12. Silicon carbide, an abrasive, is made by the reaction of silicon dioxide with graphite.

SiO2  + 3C  SiC + 2CO

If 100 g of SiO2 and 100 g of C are reacted as far as possible, which one of the following statements will be correct?

1. 111 g of SiO2 will be left over.
2. 44 g of SiO2 will be left over.
3. 82 g of C will be left over.
4. 40 g of C will be left over.
5. Both reactants will be consumed completely
6. Calculate the volume of a 0.2M NiSO4 solution that would contain exactly 40.0 g of NiSO4?
7. The mass of FeSO4 required for preparation of 125 mL of 0.90 M solution is:
8. 16.0 g
9. 25.4 g
10. 17.1 g
11. 31.7 g
12. 1708 g
13. How many mL of 12 M NH3 must be used to make 500.0 mL of a 0.25 M solution?
14. 13 mL
15. 22 mL
16. 39 mL
17. 7.3 mL
18. none of these
19. How many grams of Ag2CO3 are required to react with 28.5 mL of 1.00 M NaOH solution?

Ag2CO3(s) + 2NaOH(aq)  Ag2O(s) + Na2CO3(aq) + H2O(l)

1. 7.87 g
2. 3.93 g
3. 15.7 g
4. 10.8 g
5. 8.16 g
6. Calculate the minimum mass of NH4OH needed to completely react with 34 g of FeCl3?

FeCl3(aq) + 3NH4OH(aq)  Fe(OH)3(aq) + 3NH4Cl(aq)

1. 7.3 g
2. 33.0 g
3. 22.0 g
4. 68.8 g
5. 132 g
6. When 250. mL of a 0.15 M solution of ammonium sulphide, (NH4)2S, is poured into 120. mL of a 0.053 M solution of cadmium sulfate, CdSO4, how many grams of a yellow precipitate of cadmium sulphide, CdS, are formed? The other product is (NH4)2SO4.
7. 5.4 g
8. 0.92 g
9. 2.6 g
10. 1.9 g
11. 530 g
12. What is the molarity of a solution prepared from 10.0 g NaCl with a final solution volume of 286 mL?
13. 2.12 M
14. 0.36 M
15. 10.0 M
16. 0.60 M
17. Calculate the molar mass of CaCOH.
18. Nonane burns to produce carbon dioxide and water. C9H20 + 14O2 → 9CO2 + 10H2O Calculate the mass, in grams, of carbon dioxide produced when 32 grams of nonane is burned.
19. One 55-gram serving of a particular cereal supplies 270 mg of sodium, 11% of the recommended daily allowance. How many grams and moles sodium are in the recommended daily allowance?
20. Which of the following represents the least number of molecules?
    1. 20.0 g of H2O (18.02 g/mol)
    2. 77.0 g of CH4 (16.06 g/mol)
    3. 68.0 g of CaH2 (42.09 g/mol)
    4. 100.0 g of N2O (44.02 g/mol)
    5. 84.0 g of HF (20.01 g/mol)
21. Find the percent composition of the following: (a) K2CO3, and (b) (NH4)2O
22. The most common form of nylon is 63.68% carbon, 12.38% nitrogen, and 14.14 % oxygen. Calculate the empirical (simplest) formula for this compound.
23. Explain what changes and what stays the same when 1.00 L of a solution of NaCl is diluted to 1.80 L.
24. What does it mean when we say that a 200-mL sample and a 400-mL sample of a solution of salt have the same molarity? In what ways are the two samples identical? In what ways are these two samples different?
25. Determine the molarity of each of the following solutions:
26. 1.457 mol KCl in 1.500 L of solution
27. 0.515 g of H2SO4 in 1.00 L of solution
28. 20.54 g of Al(NO3)3 in 1575 mL of solution
29. 2.76 kg of CuSO4·5H2O in 1.45 L of solution
30. 0.005653 mol of Br2 in 10.00 mL of solution
31. 8.89x10-3 g of glycine, C2H5NO2, in 1.05 mL of solution