**Name: Period: Seat#:**

**Worksheet #8\***

**Directions**: Any worksheet that is labeled with an \* means it is suggested extra practice. We do not always have time to assign every possible worksheet that would be good practice for you to do. You can do this worksheet when you have extra time, when you finish something early, or to help you study for a quiz or a test. If and when you choose to do this Extra Practice worksheet, please do the work on binder paper. You will include this paper stapled into your Rainbow Packet when you turn it in, even if you didn’t do any of this. We want to make sure we keep it where it belongs so you can do it later if you want to (or need to). If you did the work on binder paper you can include that in your Rainbow Packet after this worksheet. If we end up with extra class time then portions of this may turn into required work. If that happens you will be told which problems are turned into required. Remember there is tons of other extra practice on the class website…and the entire internet! See me if you need help finding practice on a topic you are struggling with.

**Directions:** Perform each conversion. Show all work, show crossing units out, make sure answer has units.

Some answers are at the end so you can check your work as you go!

**Mole 🡪 Mass***(Using molar mass)*

1. 10.0 mol Cr
2. 0.160 mol H2O
3. 3.32 mol K
4. 5.08 mol Ca(NO3)2
5. 2.20 x 10–3 mol Sn
6. 15.0 mol H2SO4
7. 0.720 mol Be
8. 4.52 x 10–5 mol C2H4
9. 2.40 mol N2
10. 0.0112 mol K2CO3

**Mass 🡪 Mole***(Using molar mass)*

1. 72.0 g Ar
2. 27.4 g NO2
3. 3.70 x 10–1 g B
4. 5.00 g H2
5. 187 g Al
6. 2.64 x 10–4 g Li3PO4
7. 333 g SnF2
8. 11.0 g CH4
9. 7.21 x 10–2 g He
10. 847 g (NH4)2CO3

**What is the volume of the following gases?**

*Using molar volume, convert the following quantities. MOLAR VOLUME says that at “standard” temperature and pressure, one mole of any gas will take up 22.4 L of space. It is a conversion factor!*

1. 5.40 mol O2
2. 3.20 x 10–2 mol CO2
3. 0.960 mol SO3

**How many moles are in each of the volumes below?** *(Using molar volume)*

1. 89.6 L Ne
2. 1.00 x 103 L C2H6
3. 5.42 x 10-1 F2

**Find the number of moles in each of the following.** *(Using Avogadro’s Number)*

1. 1.20 x 1025 atoms of P
2. 3.87 x 1021 molecules of AlF3
3. 4.81 x 1014 molecules of NH3

**How many molecules are in each of the following?** *(Using Avogadro’s Number)*

1. 1.24 mol Cl2
2. 4.20 x 10–3 mol K2S
3. 34.02 mol Ca(OH)2

**Two Step Conversions***(Convert first to moles and then to the desired quantity Do each problem in ONE dimensional analysis set up!)*

1. Find the number of molecules in 60.0 g of N2O.
2. Find the volume of 3.24 x 1022 molecules of Ne
3. Find the mass of 18.0 L of CH4
4. Find the volume of 835 g of SO3
5. Find the mass of one atom of nickel.

**Mixed Problems***(Do each problem in ONE dimensional analysis set up!)*

1. Calculate the molar mass of MgBr2
2. Calculate the molar mass of ammonium phosphate
3. Convert 15 grams of Ca(OH)2 into moles
4. Convert 2.6 moles of sodium oxide to grams
5. Convert 7.4 moles of CH4 into molecules
6. Convert 2.8 x 1028 molecules into moles
7. Convert 25 grams of water into molecules
8. Convert 4.5 x 1035 atoms of iron into grams
9. How many atoms are in 50 grams of water
10. How many grams are in 8.5 moles of lithium oxide?
11. How many atoms are in 25 moles of fluorine gas?
12. If a liquid has a density 4.3 g/mL, how many molecules are in 2.3 L? (The molar mass is 200g/mol)
13. How many grams are in 5.7 x 1026 molecules of dinitrogen hexaiodide?
14. How many atoms are in 45 grams of NH3?

Answers

1. *520 g*
2. *2.88 g*
3. *130 g*
4. *834 g*
5. *0.261 g*
6. *1470 g*
7. *6.48 g*
8. *1.27 x 10-3 g*
9. *67.2 g*
10. *1.55 g*
11. *1.80 mol*
12. *0.596 mol*
13. *3.43 x 10-2 mo*
14. *2.50 mol*
15. *6.93 mol*
16. *2.28 x 10-6 mol*
17. *2.13 mol*
18. *0.688 mol*
19. *1.80 x 10-2mol*
20. *8.82 mol*
21. *121 L*
22. *0.717 L*
23. *21.5 L*
24. *4.00 mol*
25. *44.6 mol*
26. *2.42 x 10-2 mol*
27. *19.9 mol*
28. *6.43 x 10-3 mol*
29. *7.99 x 10-10 mol*
30. *7.46 x 1023 molecules*
31. *2.53 x 1021 molecules*
32. *2.048 x 1025 molecules*
33. *8.21 x 1023 molecules*
34. *1.21 L*
35. *12.9 g*
36. *234 L*
37. *1 x 10-22 g*
38. *184.1 g/mol*
39. *149.1 g/mol*
40. *0.1896 mol*
41. *161.15 g*
42. *4.45 x 1023 molec.*
43. *4651.2 mol*
44. *8.36 x 1023 molec.*
45. *4.17 x 1013 g*
46. *5.10 x 1024 atoms*
47. *253.98 g*
48. *3.01 x 1025 atoms*
49. *2.98 x 1025 molec.*
50. *7.47 x 105 g*
51. *6.36 x 1024 atoms*