

Name: _____

Period: _____

Seat#: _____

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)

- 11) 72.0 g Ar
- 12) 27.4 g NO₂
- 13) 3.70 x 10⁻¹ g B
- 14) 5.00 g H₂
- 15) 187 g Al
- 16) 2.64 x 10⁻⁴ g Li₃PO₄
- 17) 333 g SnF₂
- 18) 11.0 g CH₄
- 19) 7.21 x 10⁻² g He
- 20) 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!

- 21) 5.40 mol O₂
- 22) 3.20 x 10⁻² mol CO₂
- 23) 0.960 mol SO₃

How many moles are in each of the volumes below?

(Using molar volume)

- 24) 89.6 L Ne
- 25) 1.00 x 10³ L C₂H₆
- 26) 5.42 x 10⁻¹ F₂

Find the number of moles in each of the following.

(Using Avogadro's Number)

- 27) 1.20 x 10²⁵ atoms of P
- 28) 3.87 x 10²¹ molecules of AlF₃
- 29) 4.81 x 10¹⁴ molecules of NH₃

How many molecules are in each of the following?

(Using Avogadro's Number)

- 30) 1.24 mol Cl₂
- 31) 4.20 x 10⁻³ mol K₂S
- 32) 34.02 mol Ca(OH)₂

Dougherty Valley HS Chemistry

Reactions – Extra Molar Conversions Practice

Two Step Conversions

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

- 33)** Find the number of molecules in 60.0 g of N_2O .
34) Find the volume of 3.24×10^{22} molecules of Ne
35) Find the mass of 18.0 L of CH_4
36) Find the volume of 835 g of SO_3
37) Find the mass of one atom of nickel.

Mixed Problems

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

- 38)** Calculate the molar mass of MgBr_2
39) Calculate the molar mass of ammonium phosphate
40) Convert 15 grams of $\text{Ca}(\text{OH})_2$ into moles
41) Convert 2.6 moles of sodium oxide to grams
42) Convert 7.4 moles of CH_4 into molecules
43) Convert 2.8×10^{28} molecules into moles
44) Convert 25 grams of water into molecules
45) Convert 4.5×10^{35} atoms of iron into grams
46) How many atoms are in 50 grams of water
47) How many grams are in 8.5 moles of lithium oxide?
48) How many atoms are in 25 moles of fluorine gas?
49) If a liquid has a density 4.3 g/mL, how many molecules are in 2.3 L? (The molar mass is 200g/mol)
50) How many grams are in 5.7×10^{26} molecules of dinitrogen hexaiodide?
51) How many atoms are in 45 grams of NH_3 ?

Answers

- 520 g
- 2.88 g
- 130 g
- 834 g
- 0.261 g
- 1470 g
- 6.48 g
- 1.27×10^{-3} g
- 67.2 g
- 1.55 g
- 1.80 mol
- 0.596 mol
- 3.43×10^{-2} mol
- 2.50 mol
- 6.93 mol
- 2.28×10^{-6} mol
- 2.13 mol
- 0.688 mol
- 1.80×10^{-2} mol
- 8.82 mol
- 121 L
- 0.717 L
- 21.5 L
- 4.00 mol
- 44.6 mol
- 2.42×10^{-2} mol
- 19.9 mol
- 6.43×10^{-3} mol
- 7.99×10^{-10} mol
- 7.46×10^{23} molecules
- 2.53×10^{21} molecules
- 2.048×10^{25} molecules
- 8.21×10^{23} molecules
- 1.21 L
- 12.9 g
- 234 L
- 1×10^{-22} g
- 184.1 g/mol
- 149.1 g/mol
- 0.1896 mol
- 161.15 g
- 4.45×10^{23} molec.
- 4651.2 mol
- 8.36×10^{23} molec.
- 4.17×10^{13} g
- 5.10×10^{24} atoms
- 253.98 g
- 3.01×10^{25} atoms
- 2.98×10^{25} molec.
- 7.47×10^5 g
- 6.36×10^{24} atoms