Name Answer Key Hour _____

Using the Molar Road Map

(Honors Chemistry)

Put all answers in scientific notation with units. Show all work!

1. 56.78 g of lead (IV) sulfate → RP @ STP $56.78\text{-g } Pb(SO_4)_2 \left| \frac{1 \text{ mol}}{399\text{-g}} \right| \frac{6.02 \times 10^{23} \text{ FU}}{1 \text{ mole}}$	8.567×10^{22} FU $Pb(SO_4)_2$
2. 67.51 L of Carbon dioxide → RP @ STP $67.51\text{-L } CO_2 \left| \frac{1 \text{ mole}}{22.4\text{-L}} \right| \frac{6.02 \times 10^{23} \text{ molecules}}{1 \text{ mole}}$	1.814×10^{24} molecules
3. 57.8 g of chlorine → liters @ STP $57.8\text{-g } Cl_2 \left| \frac{1 \text{ mole}}{71\text{-g}} \right| \frac{22.4\text{-L}}{1 \text{ mole}}$	1.82×10^{1} -L
4. 7.32×10^{23} atoms of argon → liters @ STP $7.32 \times 10^{23} \text{ atoms} \left| \frac{1 \text{ mole}}{6.02 \times 10^{23} \text{ atoms}} \right| \frac{22.4\text{-L}}{1 \text{ mole}}$	2.72×10^{1} -L
5. 117.0 g of carbon monoxide → liters @ STP $117.0 \text{ g CO} \left| \frac{1 \text{ mole}}{28\text{-g}} \right| \frac{22.4\text{-L}}{1 \text{ mol}}$	9.360×10^{1} -L
6. 2.08×10^{25} atoms of gold → grams @ STP $2.08 \times 10^{25} \text{ atoms} \left| \frac{1 \text{ mole}}{6.02 \times 10^{23} \text{ atoms}} \right| \frac{197\text{-g}}{1 \text{ mole}}$	6.81×10^{3} -g
7. 84.27 L of PCl_5 → grams @ STP $84.27 \text{ L} \left| \frac{1 \text{ mole}}{22.4\text{-L}} \right| \frac{208.5\text{-g}}{1 \text{ mole}}$	7.844×10^{2} g

8. 5.6×10^{22} formula units of $Sn(SO_4)_2$ → grams @ STP

5.6×10^{22} Fu | 1 mole | 311-g
6.02×10^{23} | 1 mole

2.9×10^{1} g

9. 24 grams of iron (III) fluoride → RP @ STP

24 g FeF_3 | 1 mol | 6.02×10^{23} Fu
113 g | 1 mol

1.3×10^{23} FU

10. 127.23 liters of sulfur dioxide → RP @ STP

127.23-L SO_2 | 1 mol | 6.02×10^{23} molecules
22.4-L | 1 mol

3.4193×10^{24} molecules

11. 47.7 grams of hydrochloric acid → RP @ STP

47.7 g HCl | 1 mol | 6.02×10^{23} molecules
36.5-g | 1 mol

7.87×10^{23} molecules

12. 83.55-liters of selenium → grams @ STP

83.55 L Se | 1 mol | 79-g
22.4-L | 1 mol

2.947×10^{2} g

13. 7.4×10^{23} formula units of silver nitrate → grams @ STP

7.4×10^{23} Fu $AgNO_3$ | 1 mole | 170-g
6.02×10^{23} Fu | 1 mole

2.1×10^{2} g

14. 154.6 liters of nitrogen gas → grams @ STP

154.6 -L N_2 | 1 mole | 28-g
22.4-L | 1 mol

1.933×10^{2} g

15. 7.5×10^{23} formula units of sulfuric acid → liters @ STP

7.5×10^{23} Fu H_2SO_4 | 1 mol | 22.4-L
6.02×10^{23} Fu | 1 mol

2.8×10^{1} -L

16. 9.4×10^{25} molecules of hydrogen → liters @ STP

9.4×10^{25} molecules H_2 | 1 mol | 22.4-L
6.02×10^{23} molec | 1 mol

3.5×10^{3} L