

Name _____ Date _____ Period _____

1. Define

Mole _____

Avogadro's number _____

Representative Particle _____

Molar Mass _____

Molar Volume _____

2. If one atom has the mass of 27 u, what is the mass of one mole of that atom? _____

3. Complete the table

| Substance | Molar mass (g/mol) | Substance | Molar mass (g/mol) |
|-------------------|--------------------|--|--------------------|
| HCl | | H ₂ O ₂ | |
| SrBr ₂ | | C ₅ H ₈ O ₂ | |
| Ti | | Fe(NO ₃) ₂ | |

Remember: you need molar mass from the periodic table as a conversion factor to calculate mass

4. A balloon contains 75 mol of Helium (He)?

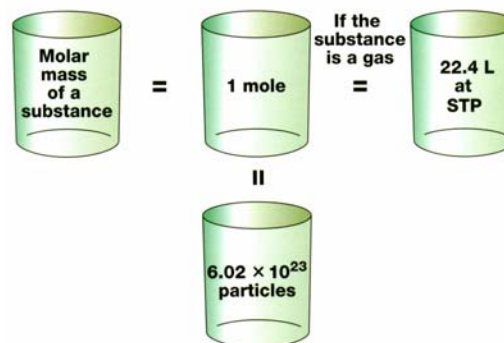
How much is that in grams

known

unknown

conversion factor

calculation

5. How many moles are 288g H₂SO₄ (sulfuric acid)?

known

unknown

conversion factor

don't forget the unit

calculation

6. 7.5 mol of platinum(II) chloride (PtCl_2) is how much in grams?

known

unknown

conversion factor

calculation

7. A sample of iron contains 1.35×10^{25} iron atoms. Convert this amount into mol.

known

unknown

conversion factor

calculation

8. If you measure exactly 0.335 mol of any element. How many atoms would you have?

known

unknown

conversion factor

calculation

9. How many liters of hydrogen gas are in a balloon that contains 8.5 mol H_2 at STP?

known

unknown

conversion factor

calculation

10. Ideal Gas law

$$PV = nRT$$

$$K = ^\circ C + 273$$

A steel cylinder, filled with nitrogen gas (N_2) has a volume of 20.0 L and a pressure of 2005 kPa at 28.0°C.

How many moles of nitrogen gas are in this cylinder?

$$P = \quad \text{kPa}$$

$$V = \quad \text{L}$$

$$T = \quad \text{K}$$

$$R = 8.31 \text{ (L} \times \text{kPa/mol K)}$$

$$n = ? \quad \text{mol}$$

b) Convert your answer (amount of nitrogen) from mole to grams. (use conversion factor between mole and molar mass, similar as you did in #4, but now for nitrogen)

known

unknown

conversion factor

calculation