

Class Copy! Do NOT take! If you need to see it again you can find it on the class website notebook tab!

Dear Students,

I'm so sorry I had to be gone again! I need you to take the notes in this packet – they go on page 187 and are KCQ. Your target is: *I can use the mole ratio to convert from moles of one substance to moles of another substance.* **PLEASE** make sure to **LEARN** from the notes, not just copy them like a robot! 😊 When you are done please attempt the mole ratio worksheet – it goes on p. 186. Use pencil! Focus on the idea that this is just dimensional analysis! You are just learning a new conversion factor! You get your numbers for this new conversion factor from the balanced equation.

Email me if you need to!

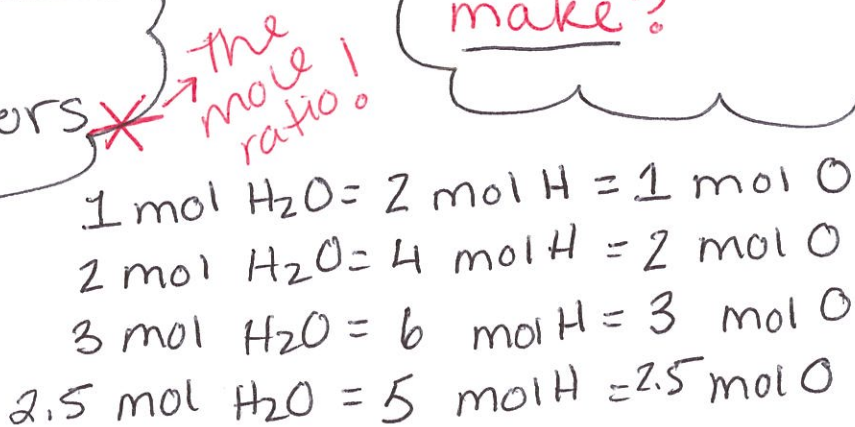
Mrs. Jamie

STEPS

- know ions
- write formulas
- cross over
- find conversion factors
- Dim. Analysis
- units

The Mole Ratio & Stoichiometry

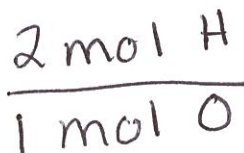
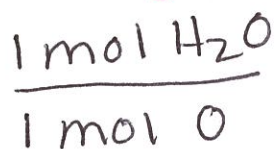
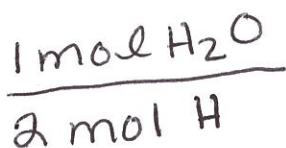
How much do I have, need or make?



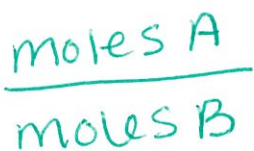
- 1:2:1
- 2:4:2
- 3:6:3
- 2.5:5:2.5

The ratio never changes!

conversion factors!

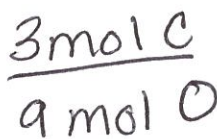
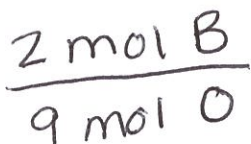
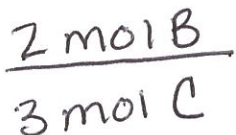
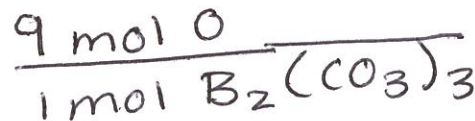
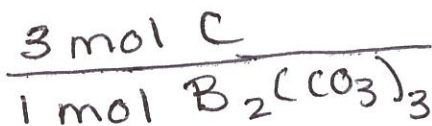
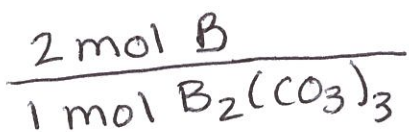


moles A : moles B



mole ratios are the key to stoichiometry!

Q: Find all the mole ratios for $\text{B}_2(\text{CO}_3)_3$



NEVER

reduce a mole ratio!

Q: Find all the mole ratios for $\text{Ca}(\text{NO}_3)_2$

$$\frac{1 \text{ mol Ca}}{1 \text{ mol Ca}(\text{NO}_3)_2}$$

$$\frac{2 \text{ mol N}}{1 \text{ mol Ca}(\text{NO}_3)_2}$$

$$\frac{6 \text{ mol O}}{1 \text{ mol Ca}(\text{NO}_3)_2}$$

$$\frac{1 \text{ mol Ca}}{2 \text{ mol N}}$$

$$\frac{2 \text{ mol N}}{6 \text{ mol O}}$$

$$\frac{1 \text{ mol Ca}}{6 \text{ mol O}}$$

mole ratios using reactions



① How many moles of water can you make if you start with 12.7 moles of C_2H_2 ?

A = known

B = unknown



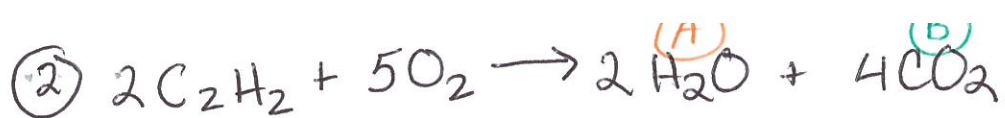
mole ratio = conversion factor

$$\frac{12.7 \text{ mol } \cancel{\text{C}_2\text{H}_2}}{\cancel{\text{C}_2\text{H}_2}} \times \frac{2 \text{ mol H}_2\text{O}}{2 \text{ mol } \cancel{\text{C}_2\text{H}_2}} = \boxed{12.7 \text{ mol H}_2\text{O}}$$

$\frac{\# \text{ mol B}}{\# \text{ mol A}}$ } #'s are always the coefficients

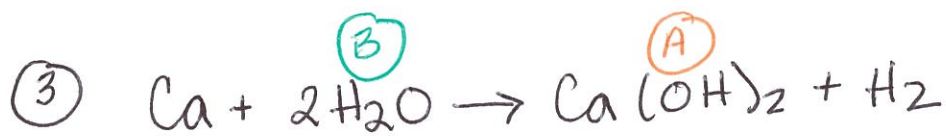
-OR-

$$\frac{12.7 \text{ mol } \cancel{\text{A}}}{\cancel{\text{A}}} \times \frac{2 \text{ mol B}}{2 \text{ mol } \cancel{\text{A}}} = 12.7 \text{ mol B} = \boxed{12.7 \text{ mol H}_2\text{O}}$$



you made 17.3 moles of water. How many moles of carbon dioxide did you make?

$$\frac{17.3 \text{ moles } \cancel{\text{A}}}{2 \text{ mole } \cancel{\text{A}}} \left| \frac{4 \text{ mole } \text{B}}{1} \right. = 34.6 \text{ mol B}$$
$$= \boxed{34.6 \text{ mol CO}_2}$$



$$\text{mole ratio} = \frac{2 \text{ mol B}}{1 \text{ mol A}}$$

$$\frac{15 \text{ mol } \cancel{\text{A}}}{1 \text{ mol } \cancel{\text{A}}} \left| \frac{2 \text{ mol } \text{B}}{1} \right. = 30 \text{ mol B}$$
$$= \boxed{30 \text{ mol H}_2\text{O}}$$