

$$25.00 \text{ g NiCl}_2 \times \frac{1 \text{ mol NiCl}_2}{129.62 \text{ g NiCl}_2} \times \frac{1 \text{ mol NiSO}_4}{1 \text{ mol NiCl}_2} \times \frac{154.77 \text{ g NiSO}_4}{1 \text{ mol NiSO}_4} = 29.85 \text{ g NiSO}_4$$

$$25.00 \text{ g Ag}_2\text{SO}_4 \times \frac{1 \text{ mol Ag}_2\text{SO}_4}{311.799 \text{ g Ag}_2\text{SO}_4} \times \frac{1 \text{ mol NiSO}_4}{1 \text{ mol Ag}_2\text{SO}_4} \times \frac{154.77 \text{ g NiSO}_4}{1 \text{ mol NiSO}_4} = \boxed{12.41 \text{ g NiSO}_4}$$

12.41 g NiSO₄ can be made and Ag₂SO₄ is the L.R.

NiCl ₂	NiSO ₄ = 12.41 g
Ag ₂ SO ₄ = 0 g	AgCl

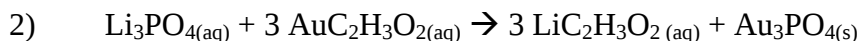
$$25.00 \text{ g Ag}_2\text{SO}_4 \times \frac{1 \text{ mol Ag}_2\text{SO}_4}{311.799 \text{ g Ag}_2\text{SO}_4} \times \frac{2 \text{ mol AgCl}}{1 \text{ Ag}_2\text{SO}_4} \times \frac{143.323 \text{ g AgCl}}{1 \text{ mol AgCl}} = 22.98 \text{ g AgCl}$$

NiCl ₂	NiSO ₄ = 12.41 g
Ag ₂ SO ₄ = 0 g	AgCl = 22.98 g

$$25.00 \text{ g Ag}_2\text{SO}_4 \times \frac{1 \text{ mol Ag}_2\text{SO}_4}{311.799 \text{ g Ag}_2\text{SO}_4} \times \frac{1 \text{ mol NiCl}_2}{1 \text{ mol Ag}_2\text{SO}_4} \times \frac{129.62 \text{ g NiCl}_2}{1 \text{ mol NiCl}_2} = 10.34 \text{ g NiCl}_2$$

25.00 g NiCl₂ (started) – 10.34 g NiCl₂ (used) = 14.66 g NiCl₂ LEFT!

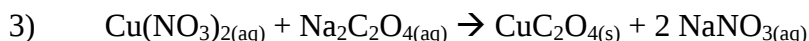
NiCl ₂ = 14.66 g	NiSO ₄ = 12.41 g
Ag ₂ SO ₄ = 0 g	AgCl = 22.98 g



This is NOT a limiting reactant problem, you were only given an amount of one reactant! I was checking to see if you were paying attention. You need only find how much of the 2 products can be made from the given mass of Li₃PO₄ (since no specific product was asked for)

$$18.9 \text{ g Li}_3\text{PO}_4 \times \frac{1 \text{ mol Li}_3\text{PO}_4}{115.788 \text{ g Li}_3\text{PO}_4} \times \frac{3 \text{ mol LiC}_2\text{H}_3\text{O}_2}{1 \text{ mol Li}_3\text{PO}_4} \times \frac{65.984 \text{ g LiC}_2\text{H}_3\text{O}_2}{1 \text{ mol LiC}_2\text{H}_3\text{O}_2} = \boxed{32.3 \text{ g LiC}_2\text{H}_3\text{O}_2}$$

$$18.9 \text{ g Li}_3\text{PO}_4 \times \frac{1 \text{ mol Li}_3\text{PO}_4}{115.788 \text{ g Li}_3\text{PO}_4} \times \frac{1 \text{ mol Au}_3\text{PO}_4}{1 \text{ mol Li}_3\text{PO}_4} \times \frac{685.872 \text{ g Au}_3\text{PO}_4}{1 \text{ mol Au}_3\text{PO}_4} = \boxed{112 \text{ g Au}_3\text{PO}_4}$$



$$0.500 \text{ g Cu}(\text{NO}_3)_2 \times \frac{1 \text{ mol Cu}(\text{NO}_3)_2}{187.55 \text{ g Cu}(\text{NO}_3)_2} \times \frac{1 \text{ mol CuC}_2\text{O}_4}{1 \text{ mol Cu}(\text{NO}_3)_2} \times \frac{151.56 \text{ g CuC}_2\text{O}_4}{1 \text{ mol CuC}_2\text{O}_4} = \boxed{0.404 \text{ g CuC}_2\text{O}_4}$$

$$1.25 \text{ g Na}_2\text{C}_2\text{O}_4 \times \frac{1 \text{ mol Na}_2\text{C}_2\text{O}_4}{133.9996 \text{ g Na}_2\text{C}_2\text{O}_4} \times \frac{1 \text{ mol CuC}_2\text{O}_4}{1 \text{ mol Na}_2\text{C}_2\text{O}_4} \times \frac{151.56 \text{ g CuC}_2\text{O}_4}{1 \text{ mol CuC}_2\text{O}_4} = 1.41 \text{ g CuC}_2\text{O}_4$$

0.404 g CuC₂O₄ can be made and Cu(NO₃)₂ is the L.R.

$\text{Cu}(\text{NO}_3)_2 = 0 \text{ g}$	$\text{CuC}_2\text{O}_4 = 0.404 \text{ g}$
$\text{Na}_2\text{C}_2\text{O}_4$	NaNO_3

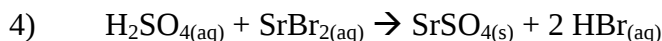
$$0.500 \text{ g Cu}(\text{NO}_3)_2 \times \frac{1 \text{ mol Cu}(\text{NO}_3)_2}{187.55 \text{ g Cu}(\text{NO}_3)_2} \times \frac{2 \text{ mol NaNO}_3}{1 \text{ mol Cu}(\text{NO}_3)_2} \times \frac{84.9947 \text{ g NaNO}_3}{1 \text{ mol NaNO}_3} = 0.453 \text{ g NaNO}_3$$

$\text{Cu}(\text{NO}_3)_2 = 0 \text{ g}$	$\text{CuC}_2\text{O}_4 = 0.404 \text{ g}$
$\text{Na}_2\text{C}_2\text{O}_4$	$\text{NaNO}_3 = 0.453 \text{ g}$

$$0.500 \text{ g Cu}(\text{NO}_3)_2 \times \frac{1 \text{ mol Cu}(\text{NO}_3)_2}{187.55 \text{ g Cu}(\text{NO}_3)_2} \times \frac{1 \text{ mol NaC}_2\text{O}_4}{1 \text{ mol Cu}(\text{NO}_3)_2} \times \frac{84.9947 \text{ g NaC}_2\text{O}_4}{1 \text{ mol NaC}_2\text{O}_4} = 0.227 \text{ g NaC}_2\text{O}_4$$

$$1.25 \text{ g Na}_2\text{C}_2\text{O}_4 \text{ (started)} - 0.227 \text{ g Na}_2\text{C}_2\text{O}_4 \text{ (used)} = 1.02 \text{ g Na}_2\text{C}_2\text{O}_4 \text{ LEFT!}$$

$\text{Cu}(\text{NO}_3)_2 = 0 \text{ g}$	$\text{CuC}_2\text{O}_4 = 0.404 \text{ g}$
$\text{Na}_2\text{C}_2\text{O}_4 = 1.02 \text{ g}$	$\text{NaNO}_3 = 0.453 \text{ g}$



$$0.525 \text{ L solution} \times \frac{1.199 \text{ mol H}_2\text{SO}_4}{1 \text{ L solution}} \times \frac{1 \text{ mol SrSO}_4}{1 \text{ mol H}_2\text{SO}_4} \times \frac{183.68 \text{ g SrSO}_4}{1 \text{ mol SrSO}_4} = 116 \text{ g SrSO}_4$$

$$23.66 \text{ g SrBr}_2 \times \frac{1 \text{ mol SrBr}_2}{247.44 \text{ g SrBr}_2} \times \frac{1 \text{ mol SrSO}_4}{1 \text{ mol SrBr}_2} \times \frac{183.68 \text{ g SrSO}_4}{1 \text{ mol SrSO}_4} = 17.6 \text{ g SrSO}_4$$

17.6 g SrSO₄ can be made and SrBr₂ is the L.R.

$\text{H}_2\text{SO}_4 =$	$\text{SrSO}_4 = 17.6 \text{ g}$
$\text{SrBr}_2 = 0 \text{ g}$	HBr

$$23.66 \text{ g SrBr}_2 \times \frac{1 \text{ mol SrBr}_2}{247.44 \text{ g SrBr}_2} \times \frac{2 \text{ mol HBr}}{1 \text{ mol SrBr}_2} \times \frac{80.917 \text{ g HBr}}{1 \text{ mol HBr}} = 15.5 \text{ g HBr}$$

$\text{H}_2\text{SO}_4 =$	$\text{SrSO}_4 = 17.6 \text{ g}$
$\text{SrBr}_2 = 0 \text{ g}$	$\text{HBr} = 15.5$

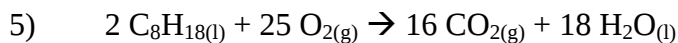
$$23.66 \text{ g SrBr}_2 \times \frac{1 \text{ mol SrBr}_2}{247.44 \text{ g SrBr}_2} \times \frac{1 \text{ mol H}_2\text{SO}_4}{1 \text{ mol SrBr}_2} \times \frac{98.075 \text{ g H}_2\text{SO}_4}{1 \text{ mol H}_2\text{SO}_4} = 9.38 \text{ g H}_2\text{SO}_4$$

You need to subtract this, so you have turn the volume of H₂SO₄ into mass:

$$0.525 \text{ L solution} \times \frac{1.199 \text{ mol H}_2\text{SO}_4}{1 \text{ L solution}} \times \frac{98.075 \text{ g H}_2\text{SO}_4}{1 \text{ mol H}_2\text{SO}_4} = 61.7 \text{ g H}_2\text{SO}_4$$

$$61.7 \text{ g H}_2\text{SO}_4 \text{ (started)} - 9.38 \text{ g H}_2\text{SO}_4 \text{ (used)} = 52.3 \text{ g H}_2\text{SO}_4 \text{ LEFT!}$$

H₂SO₄ = 52.3 g	SrSO₄ = 17.6 g
SrBr₂ = 0 g	HBr = 15.5



$$3.8 \text{ g C}_8\text{H}_{18} \times \frac{1 \text{ mol C}_8\text{H}_{18}}{114.2331 \text{ g C}_8\text{H}_{18}} \times \frac{16 \text{ mol CO}_2}{2 \text{ mol C}_8\text{H}_{18}} \times \frac{44.0100 \text{ g CO}_2}{1 \text{ mol CO}_2} = \boxed{12 \text{ g CO}_2}$$

$$22.1 \text{ g O}_2 \times \frac{1 \text{ mol O}_2}{31.9988 \text{ g O}_2} \times \frac{16 \text{ mol CO}_2}{25 \text{ mol O}_2} \times \frac{44.0100 \text{ g CO}_2}{1 \text{ mol CO}_2} = 19.5 \text{ g CO}_2$$

12 g CO₂ can be made and C₈H₁₈ is the L.R.

C ₈ H ₁₈ = 0 g	CO ₂ = 12 g
O ₂ =	H ₂ O =

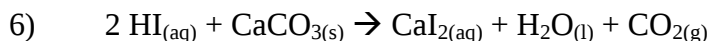
$$3.8 \text{ g C}_8\text{H}_{18} \times \frac{1 \text{ mol C}_8\text{H}_{18}}{114.2331 \text{ g C}_8\text{H}_{18}} \times \frac{18 \text{ mol H}_2\text{O}}{2 \text{ mol C}_8\text{H}_{18}} \times \frac{18.0153 \text{ g H}_2\text{O}}{1 \text{ mol H}_2\text{O}} = 5.4 \text{ g H}_2\text{O}$$

C ₈ H ₁₈ = 0 g	CO ₂ = 12 g
O ₂ =	H ₂ O = 5.4

$$3.8 \text{ g C}_8\text{H}_{18} \times \frac{1 \text{ mol C}_8\text{H}_{18}}{114.2331 \text{ g C}_8\text{H}_{18}} \times \frac{25 \text{ mol O}_2}{2 \text{ mol C}_8\text{H}_{18}} \times \frac{31.9988 \text{ g O}_2}{1 \text{ mol O}_2} = 13 \text{ g O}_2$$

22.1 g O₂ (started) – 13 g O₂ (used) = 9 g O₂ LEFT!

C₈H₁₈ = 0 g	CO₂ = 12 g
O₂ = 9	H₂O = 5.4



$$0.010 \text{ L solution} \times \frac{1.50 \text{ mol HI}}{1 \text{ L solution}} \times \frac{1 \text{ mol CaI}_2}{2 \text{ mol HI}} \times \frac{293.89 \text{ g CaI}_2}{1 \text{ mol CaI}_2} = \boxed{2.2 \text{ g CaI}_2}$$

$$0.95 \text{ g CaCO}_3 \times \frac{1 \text{ mol CaCO}_3}{100.09 \text{ g CaCO}_3} \times \frac{1 \text{ mol CaI}_2}{1 \text{ mol CaCO}_3} \times \frac{293.89 \text{ g CaI}_2}{1 \text{ mol CaI}_2} = 2.8 \text{ g CaI}_2$$

2.2 g CaI₂ can be made and HI is the L.R.

HI = 0 g	CaI ₂ = 2.2 g	CO ₂ =
CaCO ₃ =	H ₂ O =	

$$0.010 \text{ L solution} \times \frac{1.50 \text{ mol HI}}{1 \text{ L solution}} \times \frac{1 \text{ mol CO}_2}{2 \text{ mol HI}} \times \frac{44.0100 \text{ g CO}_2}{1 \text{ mol CO}_2} = 0.33 \text{ g CO}_2$$

HI = 0 g	CaI ₂ = 2.2 g	CO ₂ = 0.33 g
CaCO ₃ =	H ₂ O =	

$$0.010 \text{ L solution} \times \frac{1.50 \text{ mol HI}}{1 \text{ L solution}} \times \frac{1 \text{ mol H}_2\text{O}}{2 \text{ mol HI}} \times \frac{18.0153 \text{ g H}_2\text{O}}{1 \text{ mol H}_2\text{O}} = 0.14 \text{ g H}_2\text{O}$$

HI = 0 g	CaI ₂ = 2.2 g	CO ₂ = 0.33 g
CaCO ₃ =	H ₂ O = 0.14 g	

$$0.010 \text{ L solution} \times \frac{1.50 \text{ mol HI}}{1 \text{ L solution}} \times \frac{1 \text{ mol CaCO}_3}{2 \text{ mol HI}} \times \frac{100.09 \text{ g CaCO}_3}{1 \text{ mol CaCO}_3} = 0.75 \text{ g CaCO}_3$$

$$0.95 \text{ g H}_2\text{CO}_3 \text{ (started)} - 0.75 \text{ g H}_2\text{CO}_3 \text{ (used)} = 0.20 \text{ g H}_2\text{CO}_3 \text{ LEFT!}$$

HI = 0 g	CaI₂ = 2.2 g	CO₂ = 0.33 g
CaCO₃ = 0.20 g	H₂O = 0.14 g	