

Name: _____

date: _____ period: _____

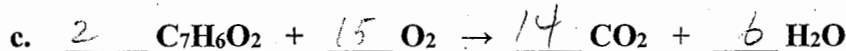
ch. 8 balance chem eqn; mole; stochi test

65 points

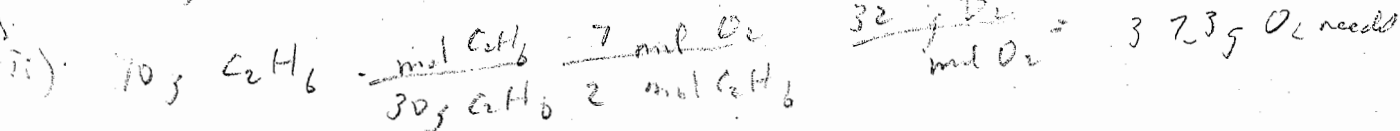
ngss chemistry

In problems involving any calculation, show your work in an organized manner, include (i) any relevant equation (or formula), (ii) conversion factor(s), and (iii) put the proper units in your calculations and answer.

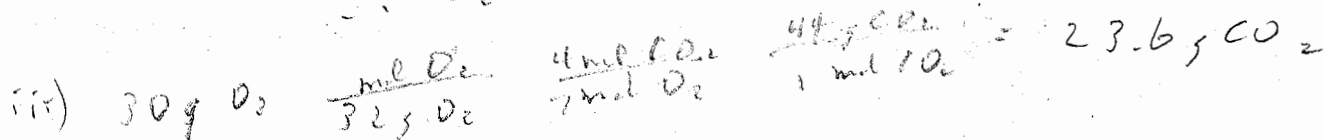
1. Fill-in below blank with the lowest ratio of integers; if it's "1", then enter "1". [15 points; source: <https://www.albert.io/blog/balancing-chemical-equations-practice-and-review/>]



2. Solve: $10.0 \text{ g C}_2\text{H}_6 + 30.0 \text{ g O}_2 \rightarrow \text{CO}_2 + \text{H}_2\text{O}$ [15 points]



∴ O_2 is limiting



5pts @ blank

3. Solve. [20 points]

a. 25 grams H₂O = ___ moles H₂O

312pt
25, H₂O $\frac{\text{mol H}_2\text{O}}{18 \text{ g H}_2\text{O}} = 1.39 \text{ mol}$

b. 1.5 mole CO₂ = ___ grams CO₂

1.5 mol CO₂ $\frac{44 \text{ g CO}_2}{\text{mol CO}_2} = 66 \text{ g}$

c. 125 millimole Ca(NO₃)₂ = ___ grams Ca(NO₃)₂

125 mmol Ca(NO₃)₂ $\frac{\text{mol}}{10^3 \text{ mmol}} \cdot \frac{164 \text{ g}}{\text{mol}} = 20.5 \text{ g Ca(NO}_3)_2$

d. 125 milligrams Ca₃(PO₄)₂ = ___ moles Ca₃(PO₄)₂

125 mg Ca₃(PO₄)₂ $\frac{\text{g}}{10^3 \text{ mg}} \cdot \frac{\text{mol}}{310 \text{ g}} = 0.000403 \text{ mol}$

4. Solve: 10.0 grams Ca(NO₃)₂ + excess Na₃PO₄ → ___ g Ca₃(PO₄)₂ + NaNO₃, where % yield = 85%. [15 points]



10 g

excess

?

50pt Q

ii) $10 \text{ g Ca(NO}_3)_2 \cdot \frac{1 \text{ mol Ca(NO}_3)_2}{164 \text{ g Ca(NO}_3)_2} \cdot \frac{1 \text{ mol Ca}_3(\text{PO}_4)_2}{3 \text{ mol Ca(NO}_3)_2} \cdot \frac{310 \text{ g}}{\text{mol}}$

= 6.30 g

iii) % yield = $\frac{\text{expt}}{\text{calc}}$

85% = $\frac{\text{expt}}{6.30}$

expt = 5.36 g