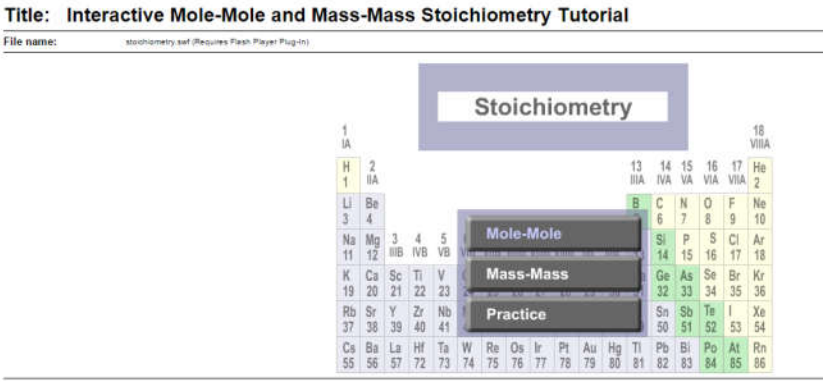
Chemistry
Ms. Ye

Name _____
Date _____Block_____

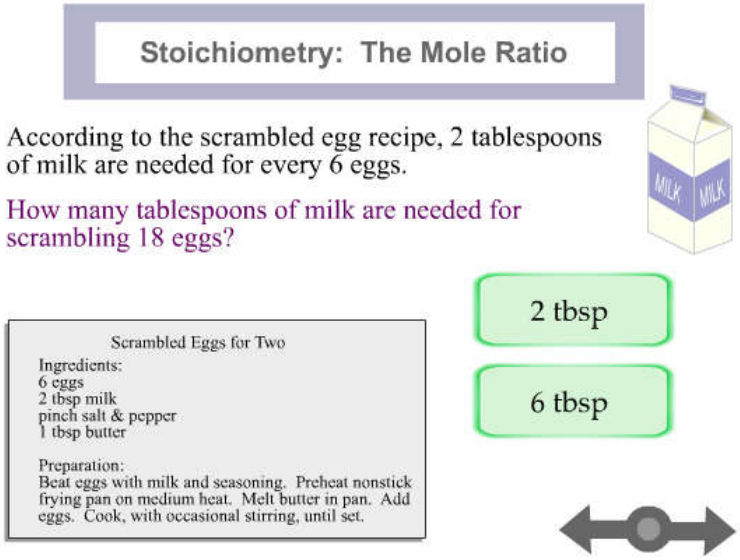
Intro to Stoichiometry

Go to: bit.ly/stoichsim



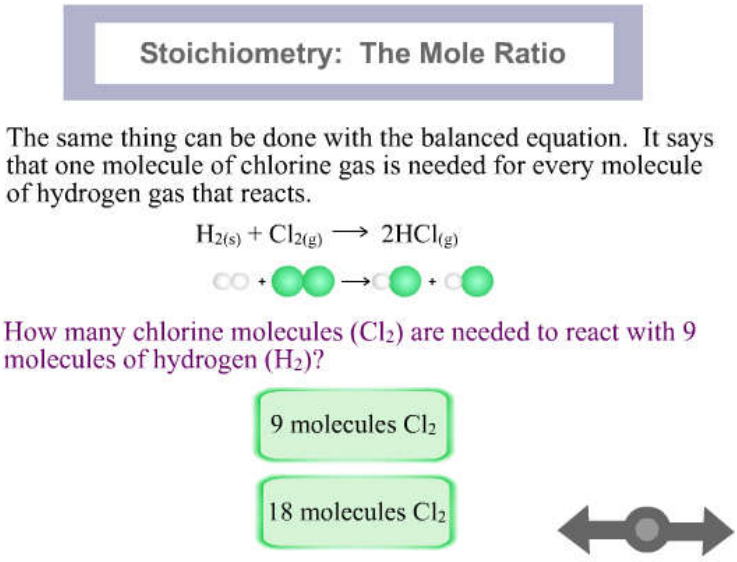
Click on **Mole-Mole**. Read each slide and answer the questions as you go through this tutorial.

1. (Slide 2)



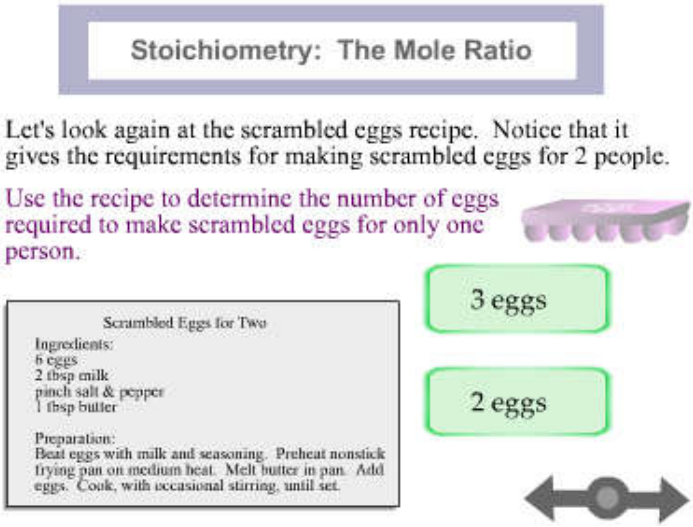
Answer the question on the slide. Hover over the green tabs to reveal the answer. Show the conversion below using dimensional analysis!

2. (Slide 3)



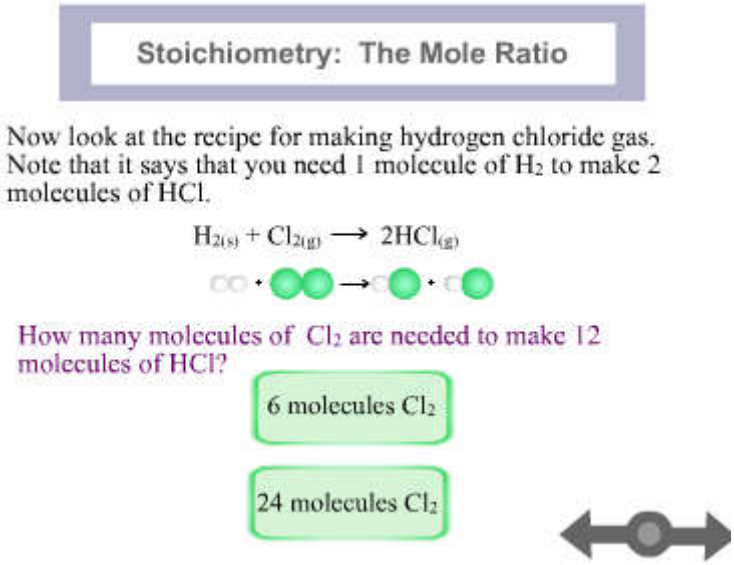
Answer the question on the slide. Hover over the green tabs to reveal the answer. Show the conversion using dimensional analysis!

3. (Slide 4).



Answer the question on the slide. Hover over the green tabs to reveal the answer. Show the conversion below using dimensional analysis!

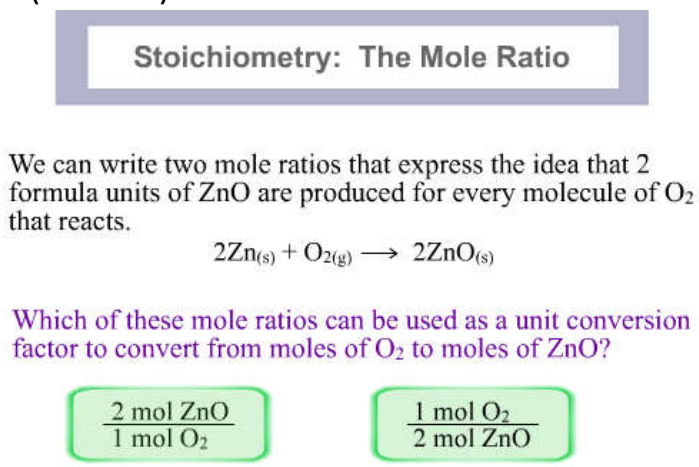
4. (Slide 5).



Answer the question on the slide. Hover over the green tabs to reveal the answer. Show the conversion below using dimensional analysis!

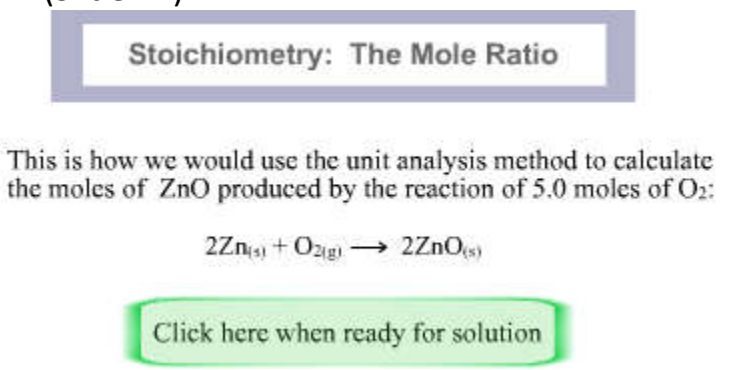
5. Read through the next five slides carefully. Pay attention to the set up and math that they do to calculate with mole ratios.

6. (Slide 10).



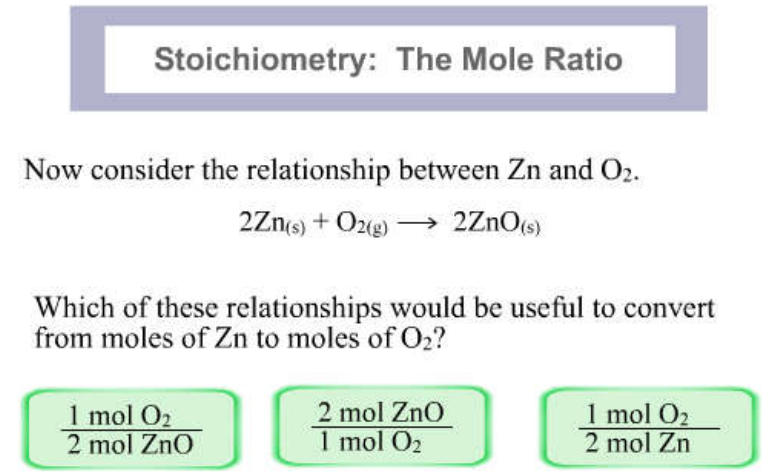
Which of the provided answers would be useful to convert moles O_2 to moles of ZnO? Explain why this is the correct answer!

7. (Slide 11).



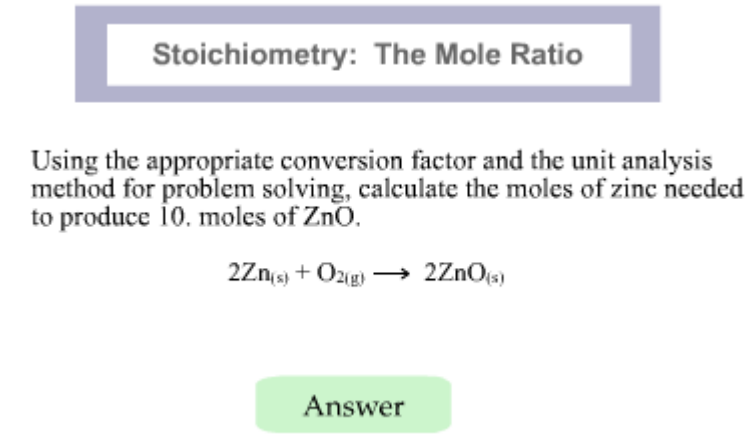
Answer the question on the slide. Show the conversion using dimensional analysis. Check your answer by holding your mouse over the corresponding green tab.

8. (Slide 12).



Which of the provided answers would be useful to convert moles of Zn to moles of O_2? Explain why this is the correct answer!

9. (Slide 13).



Answer the question on the slide. Show the conversion using dimensional analysis! Hover over the green tabs to check your answer.

10. Look through the next few problems and make sure you can solve them on your own.

11.

Stoichiometry: The Mole Ratio

Using the appropriate conversion factor, calculate the moles of hydrogen gas, H_2, produced by the reaction of 0.50 moles of aluminum metal with hydrochloric acid, HCl.

$$2Al_{(s)} + 6HCl_{(aq)} \longrightarrow 2AlCl_{3(aq)} + 3H_{2(g)}$$

Answer

Answer the question on the slide. Show the conversion using dimensional analysis! Hover over the green tabs to check your answer.

12.

Stoichiometry: The Mole Ratio

Now work this problem before looking at the answer.

Calculate the moles of N_2 needed to completely react with 1.50 moles of H_2 according to the balanced equation:

$$3H_{2(g)} + N_{2(g)} \longrightarrow 2NH_{3(g)}$$

Answer

Answer the question on the slide. Show the conversion using dimensional analysis! Hover over the green tabs to reveal the answer

Stoichiometry Mole-Mole Practice

1. In the decomposition reaction below if you were given 0.400 mol of $KClO_3$, how many moles of O_2 will form?

$$2\ KClO_3 \rightarrow 3\ O_2 + 2\ KCl$$

Given use "balanced equation"

$$X \ \frac{\qquad}{\qquad} =$$

2. When ammonia (NH_3) is burned in air, water and nitrogen gas are given off. What is the amount of nitrogen gas produced if 2.34 moles of ammonia are present?

$$4\ NH_3 + 3\ O_2 \rightarrow 6\ H_2O + 2\ N_2$$

3. Using the equation below, if there are 10.23 moles of $MgCl_2$, how many moles of KCl are produced?

$$1\ MgCl_2(aq) + 2\ KOH(aq) \rightarrow 2\ KCl(aq) + 1\ Mg(OH)_2(s)$$

4. How many moles of H_2O are needed to react with 5.25 moles of Ca?

$$1\ Ca + 2\ H_2O \rightarrow 1\ Ca(OH)_2 + 1\ H_2$$

5. How many moles of HCl would be required to produce 2.29 moles of H_2?

$$1\ Zn + 2\ HCl \rightarrow 1\ ZnCl_2 + 1\ H_2$$

6. What is the total number of moles of CO used to produce 3.75 moles of iron?

$$1\ Fe_2O_3 + 3\ CO \rightarrow 2\ Fe + 3\ CO_2$$

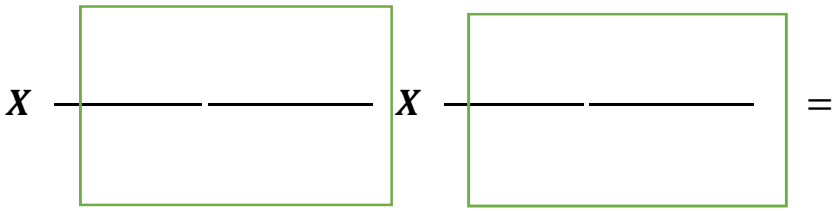
Stoichiometry with Grams Practice:

1. The combustion of a sample of butane (C_4H_{10}) produced 2.46 g of water.

$$2C_4H_{10}(l) + 13\ O_2(g) \rightarrow 8CO_2(g) + 10H_2O(g)$$

a) How many moles of CO_2 are formed?

Given — convert to moles — use balanced equation

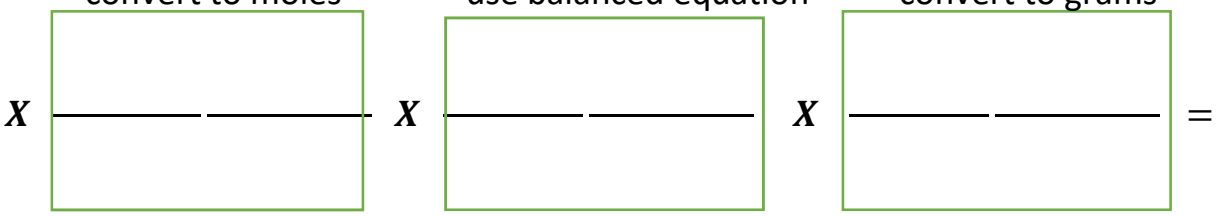


b) How many moles of butane burned?

c) How much oxygen was used up in moles?

2. If 95g of iron are needed for the reaction below, how many grams of sulfur are involved in this reaction? $2\ Fe(s) + 3\ S(s) \rightarrow 1\ Fe_2S_3(s)$

Given — convert to moles — use balanced equation — convert to grams



2. What mass of H_2SO_3 is produced when 245g of sulfur dioxide is reacted with water?

$1\ SO_2 + 1\ H_2O \rightarrow 1\ H_2SO_3$

Given — convert to moles — use balanced equation — convert to grams