Date: _____ **Instructor:** Jennifer Krug

Student Name/ID#: _____ Total Score: / 100

DEEP RUN HIGH SCHOOL - CHEMISTRY I: 1(A), 5(A), 7(A)

Unit 8 Test Review - GRADED

INSTRUCTIONS: **Color coding matches the colors used in the Stoichiometry Formula Guide in Schoology Unit 8 Notes. If you have trouble setting up the problems, use this guide to help.**

You will have three attempts to get your highest score. If you score 80% or above, you will earn 5 points extra test credit. This assignment must be completed on time in order to earn extra credit.

QUESTION 1 /1

Drag and drop the stoichiometry values in order to solve each problem.

How many atoms are in 3.0 moles of neon?

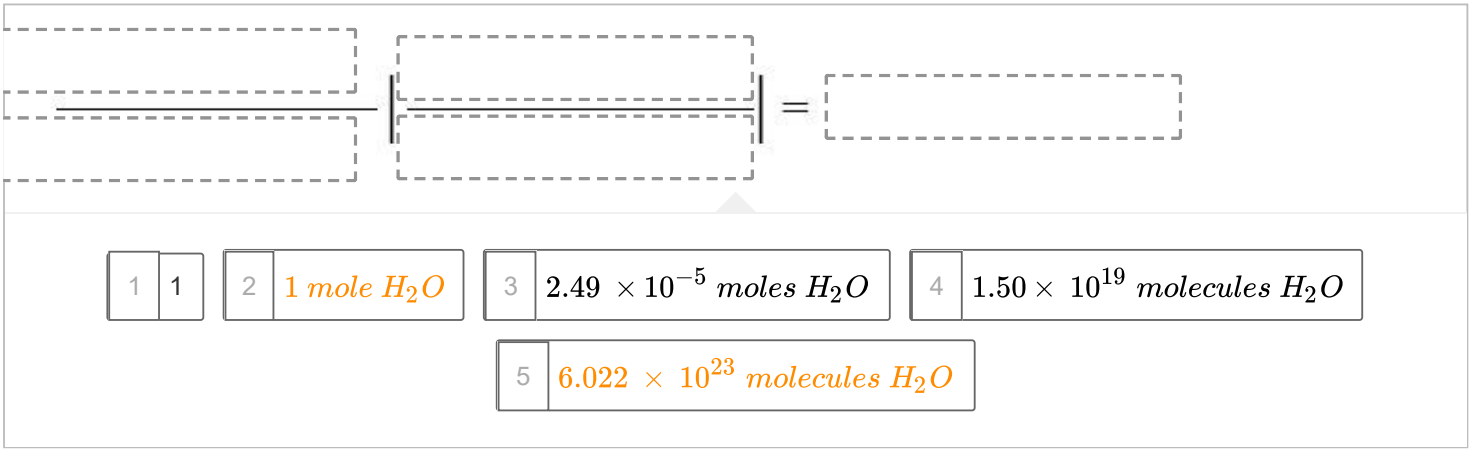
$$\frac{\square}{\square} \left| \frac{\square}{\square} \right| = \square$$

1	$1.8 \times \times 10^{24}\ atoms\ Ne$	2	$6.022 \times 10^{23}\ atoms\ Ne$	3	1	4	1 mole Ne	5	3.0 moles Ne

QUESTION 2 /1

Drag and drop the stoichiometry values in order to solve each problem.

How many moles are in 1.50×10^{19} *molecules* of water?

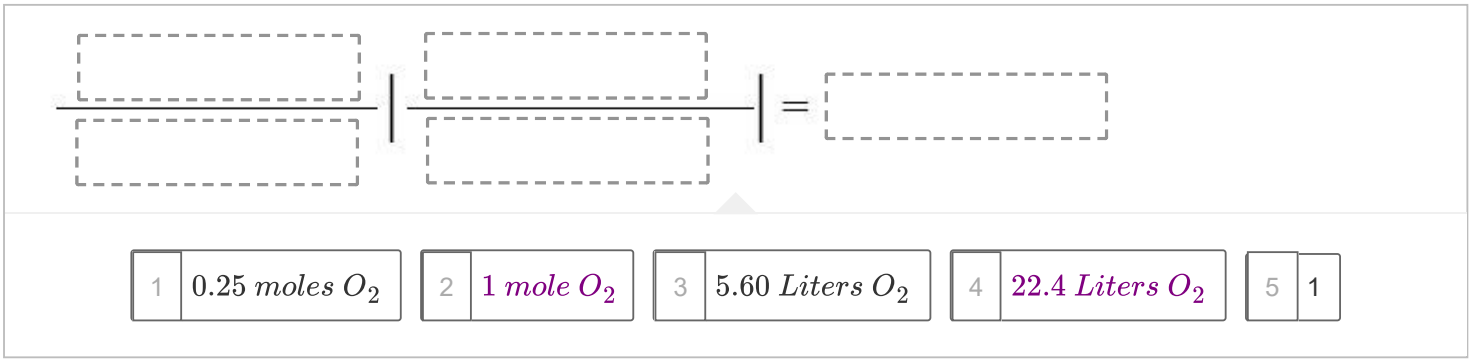


QUESTION 3

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many liters are in 0.25 moles of oxygen gas at STP?

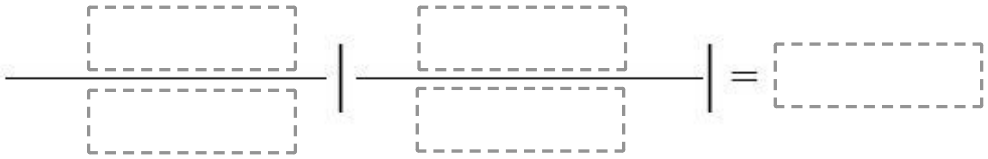


QUESTION 4

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many moles are in 4.25 liters of hydrogen gas at STP?



1	1	2	$4.25\ Liters\ H_2$	3	$22.4\ Liters\ H_2$	4	$1\ mole\ H_2$	5	$0.190\ moles\ H_2$

QUESTION 5

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many grams are in 0.75 moles of sodium chloride?

1	43.8 grams NaCl	2	58.443 grams NaCl	3	1	4	1 mole NaCl	5	0.750 moles NaCl

QUESTION 6

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many moles are in 15 grams of propane, C_3H_8?

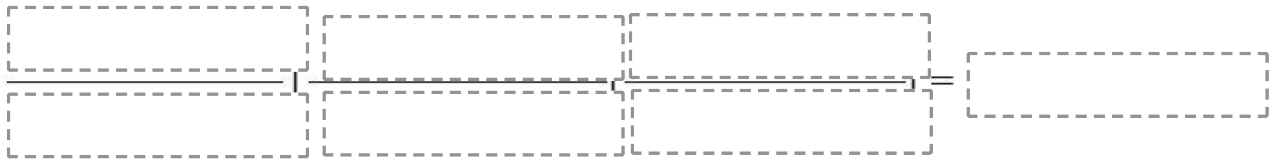
1	$15\ grams\ C_3H_8$	2	$44\ grams\ C_3H_8$	3	1	4	$1\ mole\ C_3H_8$	5	$0.34\ moles\ C_3H_8$

QUESTION 7

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many atoms are in 4.50 grams of lithium?



1	1	2	1 mole Li	3	1 mole Li	4	4.50 gram Li	5	6.941 gram Li

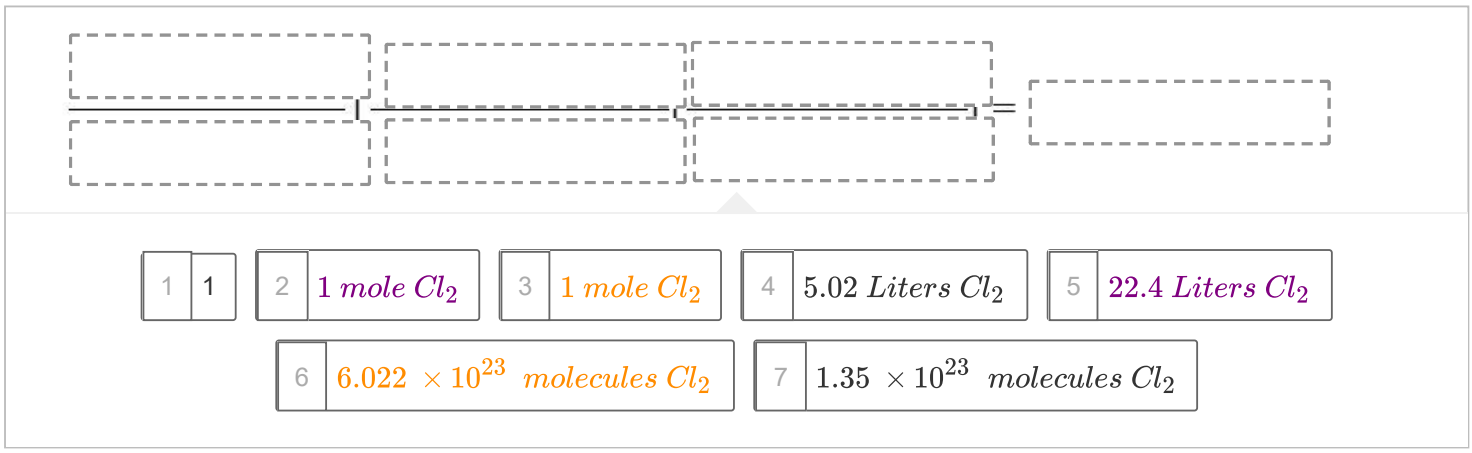
6	$6.022 \times 10^{23}\ atoms\ Li$	7	$3.90 \times 10^{23} atotms\ Li$

QUESTION 8

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many liters are in 1.35×10^{23} $molecules$ of chlorine gas at STP?

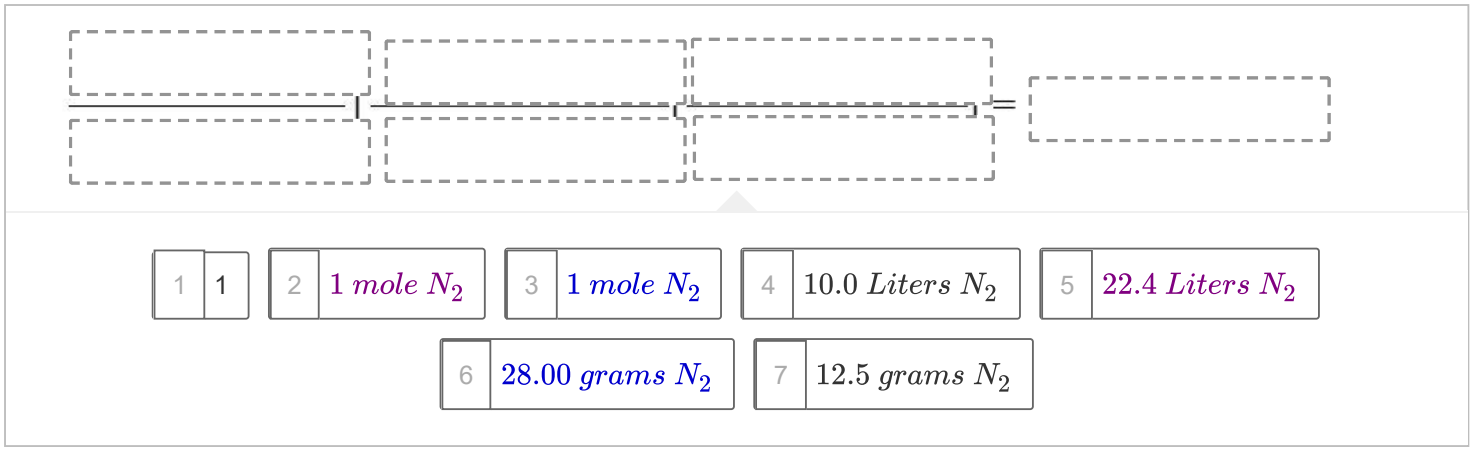


QUESTION 9

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many grams are in 10.0 liters of nitrogen gas at STP?



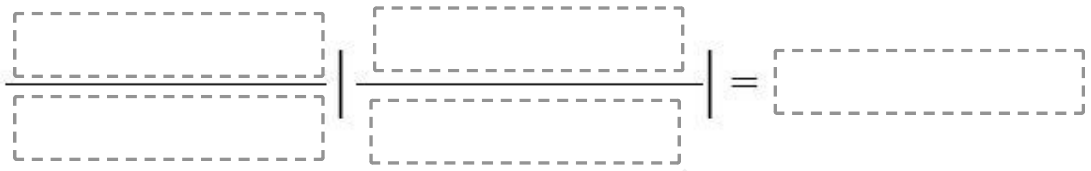
QUESTION 10

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many moles of butane are required to produce 0.500 moles of carbon dioxide?

$$2\,C_4H_{10} + 13\,O_2 \rightarrow 8\,CO_2 + 10\,H_2O$$



1 1	2 $0.500\ moles\ CO_2$	3 $0.125\ moles\ C_4H_{10}$	4 $8\ moles\ CO_2$	5 $2\ moles\ C_4H_{10}$

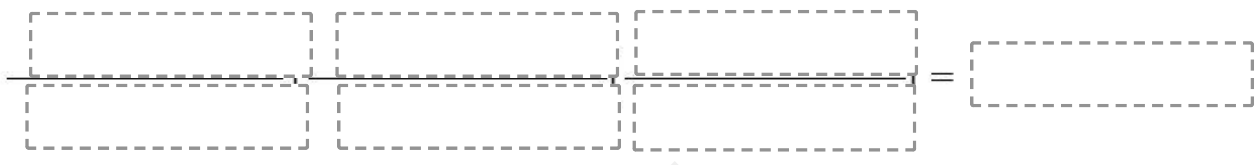
QUESTION 11

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many grams of sodium chloride are produced from 1.50 moles sodium?

$$2\,Na + Cl_2 \rightarrow 2\,NaCl$$



1 2 mole Na	2 2 mole NaCl	3 1 mole NaCl	4 58.54 grams NaCl	5 1
6 1.50 moles Na	7 87.8 grams NaCl			

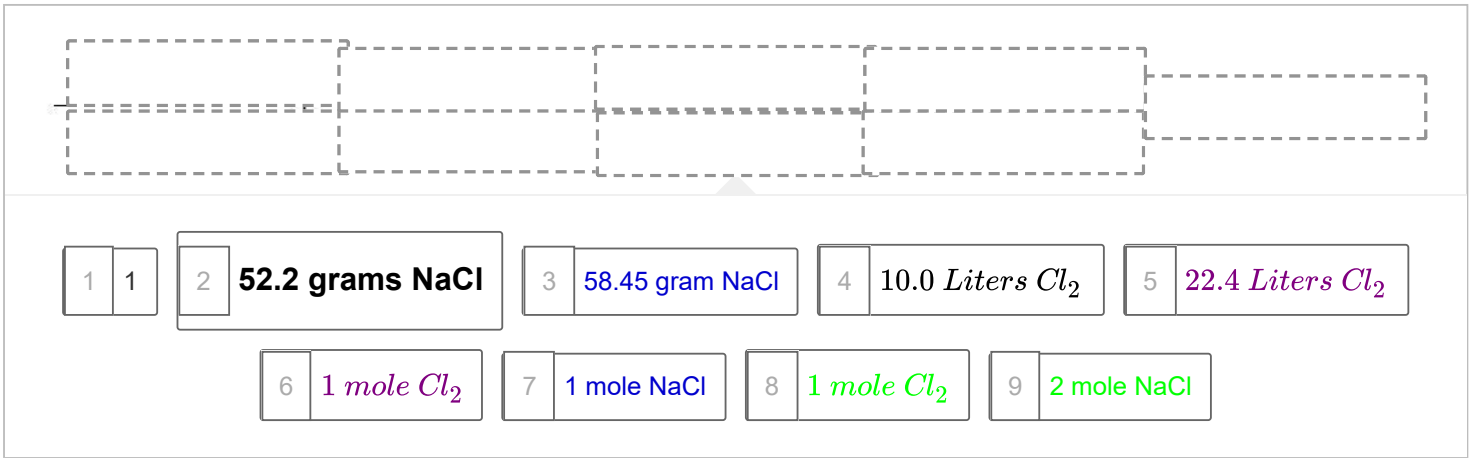
QUESTION 12

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many grams of sodium chloride are produced from 10.0 liters of chlorine gas at STP?

$$2\ Na\ +\ Cl_2\ \rightarrow\ 2\ NaCl$$



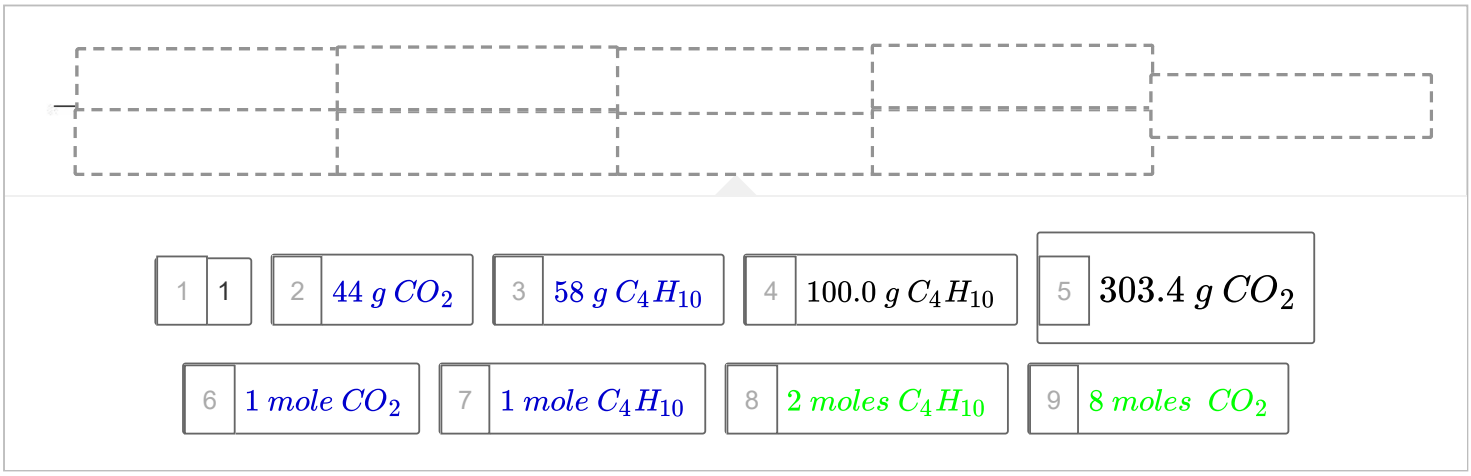
QUESTION 13

/1

Drag and drop the stoichiometry values in order to solve each problem.

How many grams of carbon dioxide can be produced from 100.0 grams of butane?

$$2\,C_4H_{10} + 13\,O_2 \rightarrow 8\,CO_2 + 10\,H_2O$$



QUESTION 14

/1

Fill in the missing value to solve this dimensional analysis equation.

Fill-in-the-blank with the missing conversion factor.

$$\frac{2.0\ moles\ CH_4}{1}\left|\frac{???\ molecules}{1\ mole\ CH_4}\right| = 1.2 \times 10^{24}\ molecules$$

QUESTION 15

/1

How many moles are in $1.80 \times 10^{22}\ atoms$ of iron?

Fill-in-the-blank with the missing number value, using the correct number of sigificant digits.

_____

$$\frac{1.80 \times 10^{22}\ atoms\ Fe}{1} \left| \frac{1\ mole\ Fe}{6.022 \times 10^{23}\ atoms\ Fe} \right| = ?\ mole\ Fe$$

QUESTION 16

/1

Fill in the missing value to solve this dimensional analysis equation.

Fill-in-the-blank with the missing number value, using the correct number of sigificant digits.

_____

$$\frac{3.1 \times 10^{23}\ molecules\ Br_2}{1} \left| \frac{1\ mole\ Br_2}{6.022 \times 10^{23}\ molecules} \right| \frac{???\ grams\ Br_2}{1\ mole\ Br_2} = 82\ grams\ Br_2$$

QUESTION 17

/1

What is the volume in liters of 250.0 grams of ammonia, NH_3?

Fill-in-the-blank with the missing number value, using the correct number of sigificant digits.

_____

$$\frac{250.0\ grams\ NH_3}{1} \left| \frac{1\ mole\ NH_3}{17\ grams\ NH_3} \right| \frac{22.4\ Liters\ NH_3}{1\ mole\ Br_2} = ???\ Liters\ NH_3$$

QUESTION 18

/1

Fill in the missing mole ratio value to solve this dimensional analysis equation.

Fill-in-the-blank with the missing number value, using the correct number of sigificant digits.

Thermite, a highly exothermic reaction, is made by combining aluminum with rust as shown below.

$$2\ Al\ +\ Fe_2O_3\ \rightarrow\ Al_2O_3\ +\ 2\ Fe$$

$$\frac{100.0\ grams\ Al}{1}\left|\frac{1\ mole\ Al}{26.98\ grams\ Al}\right|\frac{???\ \ moles\ Fe_2O_3}{???\ moles\ Al}\left|\frac{159.69\ grams\ Fe_2O_3}{1\ mole\ Fe_2O_3}\right| = 295.9\ gram$$

QUESTION 19

/1

Fill in the missing value to solve this dimensional analysis equation.

Fill-in-the-blank with the missing number value, using the correct number of sigificant digits.

How many grams of zinc are required to produce 0.050 liters hydrogen gas?

$$3\ Zn + 2\ H_3PO_4\ \rightarrow\ Zn_3(PO_4)_2 + 3\ H_2$$

$$\frac{0.050\ liters\ H_2}{1}\left|\frac{1\ mole\ H_2}{22.4\ liters\ H_2}\right|\frac{3\ moles\ Zn}{3\ moles\ H_2}\left|\frac{65.39\ grams\ Zn}{1\ mole\ Zn}\right| = ???\ grams\ Zn$$

QUESTION 20

/1

Fill-in-the-blank with the mass produced from each reactant. Then fill-in-the-blank to indicate which reactant is the limiting reactant.

Determine the Limiting Reactant, when the reaction proceeds using 25.0 grams of each reactant.

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

$$\frac{25.0\ grams\ Ca}{1} \left| \frac{1\ mole\ Ca}{40.08\ grams\ Ca} \right| \frac{1\ moles\ Ca(OH)_2}{1\ moles\ Ca} \left| \frac{74.09\ grams\ \ Ca(OH)_2}{1\ mole\ \ Ca(OH)_2} \right| = ???\ grams\ \ Ca(OH)_2$$

Amount of calcium hydroxide produced from 25.0 grams calcium? _____

$$\frac{25.0\ grams\ H_2O}{1} \left| \frac{1\ mole\ H_2O}{18\ grams\ H_2O} \right| \frac{1\ moles\ Ca(OH)_2}{2\ moles\ H_2O} \left| \frac{74.09\ grams\ \ Ca(OH)_2}{1\ mole\ \ Ca(OH)_2} \right| = ???\ grams\ \ Ca(OH)_2$$

Amount of calcium hydroxide produced from 25.0 grams water? _____

Identity of limiting reactant? _____

Amount of theoretical yield? _____ **grams** $Ca(OH)_2$

QUESTION 21

/1

In an experiment, it was determined that 45.5 g of NaCl should have been produced. Only 39.8 g of NaCl was actually produced during the experiment. What is the percent yield of this reaction?

_____%

QUESTION 22

/1

A combustion chamber contains 500 grams of propane and 2500 grams of oxygen. Assuming propane is the limiting reactant, determine the amount of excess oxygen remaining from this reaction.

$C_3H_8 + 5\,O_2 \rightarrow 3\,CO_2 + 4\,H_2O$

$$\frac{500\ \ grams\ C_3H_8}{1}\left|\frac{1\ mole\ C_3H_8}{44\ grams\ C_3H_8}\right|\frac{5\ moles\ O_2}{1\ mole\ C_3H_8}\left|\frac{32\ grams\ O_2}{1\ mole\ O_2}\right| = \_\_\_\_\_ grams\ O_2\ used$$

$$2500\ grams\ O_2\ starting - ???\ grams\ O_2\ used\ from\ above = \_\_\_\_\_\ grams\ O_2\ remaining$$