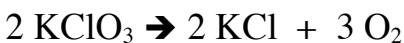


Stoichiometry Worksheet and Key



1. How many moles of O_2 will be formed from 1.65 moles of KClO_3 ?

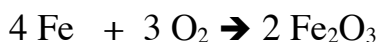
$$\frac{1.65 \text{ mol KClO}_3}{\quad \text{mol KClO}_3} \left| \frac{\quad \text{mol O}_2}{\quad} \right| = \quad \text{mol O}_2$$

2. How many moles of KClO_3 are needed to make 3.50 moles of KCl ?

$$\frac{3.50 \text{ mol KCl}}{\quad} \left| \frac{\quad \text{mol KClO}_3}{\quad} \right| = \quad \text{mol KClO}_3$$

3. How many moles of KCl will be formed from 2.73 moles of KClO_3 ?

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



4. How many moles of Fe_2O_3 are produced when 0.275 moles of Fe is reacted?

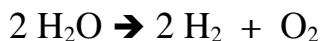
$$\frac{0.275 \text{ mol Fe}}{\quad} \left| \frac{\quad \text{mol Fe}_2\text{O}_3}{\quad} \right| = \quad \text{mol Fe}_2\text{O}_3$$

5. How many moles of Fe_2O_3 are produced when 31.0 moles of O_2 is reacted?

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

6. How many moles of O_2 are needed to react with 8.9 moles of Fe ?

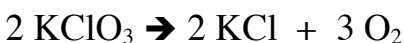
$$\frac{\quad}{\quad} \left| \frac{\quad}{\quad} \right| = \quad$$



7. How many moles of O_2 are produced when 1.26 moles of H_2O is reacted?

8. How many moles of H_2O are needed to produce 55.7 moles of H_2 ?

9. If enough H_2O is reacted to produce 3.40 moles of H_2 , then how many moles of O_2 must have been made?
(a bit challenging, but just think about it and you can probably figure it out)



10. How many **grams** of O_2 will be formed from 3.76 grams of KClO_3 ?

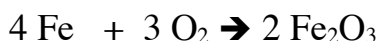
3.76g KClO_3	1 mol KClO_3	___ mol O_2	___ g O_2	=	_____ g O_2
	122.55 g KClO_3	___ mol KClO_3	___ mol O_2		

11. How many **grams** of KClO_3 are needed to make 30.0 grams of KCl ?

30.0 g KCl	___ mol KCl	___ mol KClO_3	___ g KClO_3	=	_____ g KClO_3
	___ g KCl	___ mol KCl	___ mol KClO_3		

12. How many grams of KCl will be formed from 2.73 g of KClO_3 ?

2.73 g KClO_3				=	_____ g KCl



13. How many **grams** of Fe_2O_3 are produced when 42.7 **grams** of Fe is reacted?

42.7 g Fe	___ mol Fe	___ mol Fe_2O_3	___ g Fe_2O_3	=	_____ g Fe_2O_3
	___ g Fe	___ mol Fe	___ mol Fe_2O_3		

14. How many **grams** of Fe_2O_3 are produced when 17.0 grams of O_2 is reacted?

17.0 g O_2				=	_____ g Fe_2O_3

15. How many grams of O_2 are needed to react with 125 grams of Fe ?

				=	_____

Some cars can use butane (C_4H_{10}) as fuel:



16. How many grams of CO_2 are produced from the combustion of 100. grams of butane?

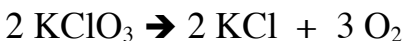
100. g C_4H_{10}				=	_____ g CO_2

17. How many grams of O_2 are needed to react with of 100. grams of butane?

100. g C_4H_{10}				=	_____ g O_2

18 How many grams of H_2O are produced when 5.38g of O_2 is reacted?

KEY



1. How many moles of O_2 will be formed from 1.65 moles of KClO_3 ?

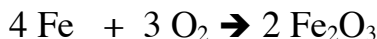
$$\frac{1.65 \text{ mol KClO}_3}{\phantom{1.65 \text{ mol KClO}_3}} \left| \frac{3 \text{ mol O}_2}{2 \text{ mol KClO}_3} \right| = \underline{2.48} \text{ mol O}_2$$

2. How many moles of KClO_3 are needed to make 3.50 moles of KCl ?

$$\frac{3.50 \text{ mol KCl}}{\phantom{3.50 \text{ mol KCl}}} \left| \frac{2 \text{ mol KClO}_3}{2 \text{ mol KCl}} \right| = \underline{3.50} \text{ mol KClO}_3$$

3. How many moles of KCl will be formed from 2.73 moles of KClO_3 ?

$$\frac{2.73 \text{ moles KClO}_3}{\phantom{2.73 \text{ moles KClO}_3}} \left| \frac{2 \text{ mol KCl}}{2 \text{ mol KClO}_3} \right| = \underline{2.73} \text{ mol KCl}$$



4. How many moles of Fe_2O_3 are produced when 0.275 moles of Fe are reacted?

$$\frac{0.275 \text{ mol Fe}}{\phantom{0.275 \text{ mol Fe}}} \left| \frac{2 \text{ mol Fe}_2\text{O}_3}{4 \text{ mol Fe}} \right| = \underline{0.138} \text{ mol Fe}_2\text{O}_3$$

5. How many moles of Fe_2O_3 are produced when 31.0 moles of O_2 are reacted?

$$\frac{31.0 \text{ mol O}_2}{\phantom{31.0 \text{ mol O}_2}} \left| \frac{2 \text{ mol Fe}_2\text{O}_3}{3 \text{ mol O}_2} \right| = \underline{20.7} \text{ mol Fe}_2\text{O}_3$$

6. How many moles of O_2 are needed to react with 8.9 moles of Fe ?

$$\frac{8.9 \text{ mol Fe}}{\phantom{8.9 \text{ mol Fe}}} \left| \frac{3 \text{ mol O}_2}{4 \text{ mol Fe}} \right| = \underline{6.7} \text{ mol O}_2$$



7. How many moles of O_2 are produced when 1.26 moles of H_2O is reacted?

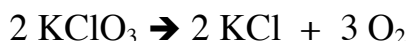
$$\frac{1.26 \text{ mol H}_2\text{O}}{\phantom{1.26 \text{ mol H}_2\text{O}}} \left| \frac{1 \text{ mol O}_2}{2 \text{ mol H}_2\text{O}} \right| = \underline{.630} \text{ mol O}_2$$

8. How many moles of H_2O are needed to produce 55.7 moles of H_2 ?

$$\frac{55.7 \text{ mol H}_2}{\phantom{55.7 \text{ mol H}_2}} \left| \frac{2 \text{ mol H}_2\text{O}}{2 \text{ mol H}_2} \right| = \underline{55.7} \text{ mol H}_2\text{O}$$

9. If enough H_2O is reacted to produce 3.40 moles of H_2 , then how many moles of O_2 must have been made?
(a bit challenging, but just think about it and you can probably figure it out)

$$\frac{3.40 \text{ mol H}_2}{\phantom{3.40 \text{ mol H}_2}} \left| \frac{1 \text{ mol O}_2}{2 \text{ mol H}_2} \right| = \underline{1.70} \text{ mol O}_2$$



10. How many **grams** of O_2 will be formed from 3.76 grams of KClO_3 ?

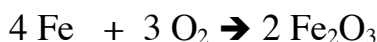
3.76g KClO_3	1 mol KClO_3	<u>3</u> mol O_2	<u>32.00</u> g O_2	= <u>1.47</u> g O_2
	122.55 g KClO_3	<u>2</u> mol KClO_3	<u>1</u> mol O_2	

11. How many **grams** of KClO_3 are needed to make 30.0 grams of KCl ?

30.0 g KCl	<u>1</u> mol KCl	<u>2</u> mol KClO_3	<u>122.55</u> g KClO_3	= <u>49.3</u> g KClO_3
	<u>74.55</u> g KCl	<u>2</u> mol KCl	<u>1</u> mol KClO_3	

12. How many grams of KCl will be formed from 2.73 g of KClO_3 ?

2.73 g KClO_3	<u>1</u> mol KClO_3	<u>2</u> mol KCl	<u>74.55</u> g	= <u>1.66</u> g KCl
	<u>122.55</u> g KClO_3	<u>2</u> mol KClO_3	<u>1</u> mol KCl	



13. How many **grams** of Fe_2O_3 are produced when 42.7 **grams** of Fe is reacted?

42.7 g Fe	<u>1</u> mole Fe	<u>2</u> mol Fe_2O_3	<u>159.70</u> g Fe_2O_3	= <u>61.0</u> g Fe_2O_3
	<u>55.85</u> g Fe	<u>4</u> mol Fe	<u>1</u> mol Fe_2O_3	

14. How many **grams** of Fe_2O_3 are produced when 17.0 grams of O_2 is reacted?

17.0 g O_2	<u>1</u> mol O_2	<u>2</u> mol Fe_2O_3	<u>159.70</u> g Fe_2O_3	= <u>56.6</u> g Fe_2O_3
	<u>32.00</u> g O_2	<u>3</u> mol O_2	<u>1</u> mol Fe_2O_3	

15. How many grams of O_2 are needed to react with 125 grams of Fe ?

125 g Fe	<u>1</u> mol Fe	<u>3</u> mol O_2	<u>32.00</u> g O_2	= <u>53.7</u> g O_2
	<u>55.85</u> g Fe	<u>4</u> mol Fe	<u>1</u> mol O_2	

Some cars can use butane (C_4H_{10}) as fuel:



16. How many grams of CO_2 are produced from the combustion of 100. grams of butane?

100. g C_4H_{10}	<u>1</u> mol C_4H_{10}	<u>8</u> mol CO_2	<u>44.01</u> g CO_2	= <u>303</u> g CO_2
	<u>58.14</u> g C_4H_{10}	<u>2</u> mol C_4H_{10}	<u>1</u> mol CO_2	

17. How many grams of O_2 are needed to react with of 100. grams of butane?

100. g C_4H_{10}	<u>1</u> mol C_4H_{10}	<u>13</u> mol O_2	<u>32.00</u> g O_2	= <u>358</u> g O_2
	<u>58.14</u> g C_4H_{10}	<u>2</u> mol C_4H_{10}	<u>1</u> mol O_2	

18 How many grams of H_2O are produced when 5.38g of O_2 is reacted?

5.38g O_2	<u>1</u> mol O_2	<u>10</u> mol H_2O	<u>18.02</u> g H_2O	= <u>2.33</u> g H_2O
	<u>32.00</u> g O_2	<u>13</u> mol O_2	<u>1</u> mol H_2O	