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Mass Stoichiometry

Activity 1: Apprentice Difficulty Level
Question Group 1
Question 1

Consider the reaction: $N_2 + 3\,H_2 \rightarrow 2\,NH_3$

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass N_2	+	Mass H_2	→	Mass NH_3
1	28.0				
2			1.5		
3	56.0				
4					51.0
5	140.0				

Question 2

Consider the reaction: $N_2 + 3\,H_2 \rightarrow 2\,NH_3$

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass N_2	+	Mass H_2	→	Mass NH_3
1	28.0				
2			3.0		
3	42.0				
4					68.0
5	210.0				

Question 3

Consider the reaction: 4 **Na** + **O_2** → **2 Na_2O**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass Na	+	Mass O_2	→	Mass Na_2O
1	92.0				
2			16.0		
3	138.0				
4					310.0
5	276.0				

Question 4

Consider the reaction: 4 **Na** + **O_2** → **2 Na_2O**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass Na	+	Mass O_2	→	Mass Na_2O
1	92.0				
2			8.0		
3	46.0				
4					620.0
5	368.0				

Question 5

Consider the reaction: **$2\ H_2 + O_2 \rightarrow 2\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass H_2	+	Mass O_2	→	Mass H_2O
1	4.0				
2			16.0		
3	30.0				
4					90.0
5	60.0				

Question 6

Consider the reaction: **$2\ H_2 + O_2 \rightarrow 2\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass H_2	+	Mass O_2	→	Mass H_2O
1	4.0				
2			8.0		
3	20.0				
4					180.0
5	80.0				

Activity 2: Master Difficulty Level
Question Group 2
Question 7
Consider the reaction: $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$
The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_3H_8	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	44.1						
2			48.0				
3	220.5						
4					440.1		

Question 8
Consider the reaction: $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$
The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_3H_8	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	44.1						
2			64.0				
3	352.8						
4					220.0		

Question 9
Consider the reaction: $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$
The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_3H_8	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	44.1						
2			96.0				
3	264.6						
4					660.2		

Question 10

Consider the reaction: **$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 12\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_4H_{10}	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	116.2						
2			208.0				
3	581.0						
4					176.0		

Question 11

Consider the reaction: **$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 12\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_4H_{10}	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	116.2						
2			104.0				
3	464.8						
4					704.2		

Question 12

Consider the reaction: **$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 12\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_4H_{10}	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	116.2						
2			832.0				
3	348.6						
4					88.0		

Activity 3: Wizard Difficulty Level
Question Group 3
Question 13
Consider the reaction: $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$
The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_3H_8	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	29.7						
2			53.4				
3	251.9						
4					389.3		

Question 14
Consider the reaction: $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$
The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_3H_8	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	52.5						
2			88.1				
3	367.2						
4					234.8		

Question 15
Consider the reaction: $C_3H_8 + 5\ O_2 \rightarrow 3\ CO_2 + 4\ H_2O$
The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_3H_8	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	41.0						
2			77.6				
3	239.2						
4					578.8		

Question 16
Consider the reaction: **$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 12\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_4H_{10}	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	109.4						
2			187.6				
3	521.5						
4					164.2		

Question 17
Consider the reaction: **$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 12\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_4H_{10}	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	108.9						
2			136.8				
3	479.5						
4					726.0		

Question 18
Consider the reaction: **$2\ C_4H_{10} + 13\ O_2 \rightarrow 8\ CO_2 + 12\ H_2O$**

The mass (in grams) of a reactant or product is shown in the table. Determine the mass (in grams) of the other species that will react with or be produced by the given mass.

	Mass C_4H_{10}	+	Mass O_2	→	Mass CO_2	+	Mass H_2O
1	208.2						
2			944.7				
3	411.1						
4					125.9		