Chemical Reactions and Quantities

Answer the questions below

1. **Identify the chemical change in the following:**

- burning paper
- cutting a piece of thread
- melting ice in a glass
- boiling water in a pan

2. **What is the coefficient needed for Al when the equation $Al + Cl_2 = AlCl_3$ is balanced?**

- 2
- 1
- 3
- 6

3. **Classify the type of reaction for the reaction $Fe_2S_3 = 2Fe + 3S$**

- double replacement
- decomposition
- combination
- single replacement

4. **How many atoms are in one mole of aluminum atoms?**

- 1
- 6.02×10^{-23}
- 6.02
- 6.02×10^{23}

5. **What is the molar mass of the antacid $Al(OH)_3$?**

- 61.0 g/mole
- 44.0 g/mole
- 78.0 g/mole
- 22.0 g/mole

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6. **How many grams are in 1.5 moles of P?**

- 23 g
- 46.5 g
- 47 g
- 22.5 g

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7. **How many moles are in 18.2 g of CO_2?**

- 41.4 moles
- 2.42 moles
- 0.414 moles
- 801 moles

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8. **What is the mass in grams of 0.250 moles of CH_4?**

- 4.00 g
- 64.0 g
- 4.0 g
- 4 g

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9. **What are the possible mole factors for Fe and O_2 in the equation $4Fe + 3O_2 = 2Fe_2O_3$?**

- 1 mole Fe/1 mole O_2 and 1 mole O_2/1 mole Fe
- 4 mole Fe/2 mole Fe_2O_3
- 4 mole Fe/1 mole O_2 and 1 mole O_2/4 mole Fe
- 4 mole Fe/3 mole O_2 and 3 mole O_2/4 mole Fe

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10. **Consider the reaction $N_2 + 3H_2 = 2NH_3$ How many moles of H_2 are needed to completely react 56 g of N_2?**

- 1.0 moles of H_2
- 3.0 moles of H_2
- 2.0 moles of H_2
- 6.0 moles of H_2

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11. **Consider the reaction $N_2 + 3H_2 = 2NH_3$ How many grams of NH_3 are produced when 6.0 g of H_2 completely react?**

- 9.0 g of NH_3
- 3.0 g of NH_3
- 4.0 g of NH_3
- 34 g of NH_3

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12. **Complete and balance the following combustion reaction $C_4H_8 + O_2 =$**

- $C_4H_8 + O_2 = 4CO_2 + 4H_2O$
- $C_4H_8 + O_2 = 4CO_2 + H_2O$
- $C_4H_8 + 6O_2 = 4CO_2 + 4H_2O$
- $C_4H_8 + O_2 = CO_2$

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13. **How many grams are in 0.0150 mole of caffeine $C_8H_{10}N_4O_2$**

- 2.91 g
- 0.825 g
- 194 g
- 129g

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14. What type of reaction is $2Fe + 3H_2SO_4 = Fe_2(SO_4)_3 + 3H_2$?

- double replacement
- decomposition
- combination
- single replacement

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15. Which of the following is an oxidation?

- $Fe^{3+} + e^- = Fe^{2+}$
- $Fe^{3+} + 3e^- = Fe$
- $Fe = Fe^{2+} + 2e^-$
- $Cl + e^- = Cl^-$