### Stoich Benchmark Practice Test

**Name __________________________________________ Per____ Seat #____**

**1.** 4.2 moles of copper contains
- a. 4.2 atoms
- b. 2.53 × 10^{24} atoms
- c. 8.45 × 10^{23} atoms
- d. 2.53 × 10^{24} g
- e. 63.55 g

**2.** What is the mass of 125 atoms of carbon in grams?
- a. 12.01 g
- b. 2.49 × 10^{-21} grams
- c. 1.06 × 10^{24} grams
- d. 2.08 × 10^{-22} grams
- e. 1501.25 grams

**3.** A 2.1 mole sample of K₂O reacts with H₂O: K₂O + H₂O → 2KOH
How many moles of KOH are formed assuming 100% yield?
- a. 4.2 mole
- b. 1.05 mole
- c. 8.4 mole
- d. 2.1 mole
- e. 18.0 mole

**4.** Refer to the following equation: N₂O₃ + H₂O → 2HNO₂
How many moles of water will produce 6.3 moles of HNO₂?
- a. 6.3 mole
- b. 3.2 mole
- c. 12.6 mole
- d. 18.02 mole
- e. 45.02 mole

**5.** How many molecules of H₂BO₃ will be formed if 6.37 g of water are reacted in this unbalanced reaction: B₂O₃ + H₂O → H₂BO₃?
- a. 1.62 × 10^{24} molecules
- b. 1.42 × 10^{23} molecules
- c. 5.23 × 10^{23} molecules
- d. 2.34 × 10^{24} molecules
- e. 1.42 × 10^{23} molecules

**6.** Refer to the following unbalanced reaction:

\[ \text{CaS}_2 + 2\text{O}_2 \rightarrow \text{CaS}_2\text{O}_3 \]
What mass of oxygen in required to produce 31.5 g of CaS₂O₃?
- a. 2.99 g
- b. 1.99 g
- c. 9.93 g
- d. 5.05 g
- e. 31.5 g

**7.** How many moles of CH₄ in 64 g of CH₄?
- a. 16.05 mole
- b. 3.09 mole
- c. 4.12 mole
- d. 1.00 mole
- e. 8.30 mole

**8.** How many oxygen atoms are in 3.2 moles of O₂?
- a. 5.34 × 10⁴ atoms
- b. 1.93 × 10⁵ atoms
- c. 1.06 × 10⁵ atoms
- d. 1.93 × 10⁴ atoms
- e. 3.85 × 10⁴ atoms

**9.** The balanced reaction:

\[ \text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O} \]
4.5 moles of oxygen gas will produce 2.3 moles of CH₄.
- a. React with 2.3 moles of CH₄
- b. Produce 2.3 moles of H₂O
- c. React with 4.5 moles of CH₄
- d. Produce 9.0 moles of CO₂

**10.** How many moles of oxygen are reacted to produce 20.7 g of iron(III) oxide (molar mass = 159.7 g/mol) in the unbalanced synthesis reaction below:

\[ \text{Fe} + \text{O}_2 \rightarrow \text{Fe}_2\text{O}_3 \]
- a. 15.9 mole
- b. 0.19 mole
- c. 0.54 mole
- d. 0.42 mole
- e. 1.2 mole

**11.** For the unbalanced reaction:

\[ \text{PCl}_3 + \text{H}_2\text{O} \rightarrow \text{H}_3\text{PO}_3 + \text{HCl} \]
How many grams of HCl can be produced from 27.7 g of PCl₃ and excess water?
- a. 7.35 g
- b. 11.03 g
- c. 22.06 g
- d. 32.05 g
- e. 27.7 g

**12.** How many atoms in 35.4 g of oxygen?
- a. 2.21 × 10²³ atoms
- b. 1.06 × 10²⁴ atoms
- c. 6.02 × 10²³ atoms
- d. 1.33 × 10²⁴ atoms
- e. 3.54 × 10¹² atoms

**13.** What is the molar mass of Al₂O₃?
- a. 48.0 g
- b. 102.0 g
- c. 53.9 g
- d. 43.9 g
- e. 204.2 g

**14.** If 57.2 g of water is produced in the reaction of C₃H₈ with O₂ to form CO₂ and H₂O, How many grams of O₂ are reacted?
- a. 42.5 g
- b. 81.2 g
- c. 101.6 g
- d. 127.0 g
- e. 250.5 g

**15.** For the unbalanced reaction:

\[ \text{H}_2\text{S} + \text{Cl}_2 \rightarrow \text{S}_8 + \text{HCl} \]
How many grams of HCl can be produced from 36.4 g of H₂S and excess chlorine gas?
- a. 80.45 g
- b. 38.99 g
- c. 116.79 g
- d. 38.93 g
- e. 77.86 g
Stoich Benchmark Practice Test

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<th>Correct Answer</th>
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<tr>
<td>16. How many atoms of chlorine are in 62.3g of chlorine?</td>
<td>a. 1.06X10^24 atoms</td>
<td>b. 1.76X10^24 atoms</td>
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<tr>
<td>17. If 36.1g of CO₂ is produced in the reaction of Glucose(C₆H₁₂O₆) with O₂ to form CO₂ and H₂O, How many grams of H₂O are produced in this reaction?</td>
<td>a. 44.34g</td>
<td>b. 11.09g</td>
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<td>18. The Molar mass of NaCl is</td>
<td>a. 70.6g</td>
<td>b. 58.4g</td>
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<td>19. What is the molar mass of copper(II) sulfate?</td>
<td>a. 64.0g</td>
<td>b. 63.6g</td>
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<tr>
<td>20. The balanced equation N₂ + 3H₂ → 2NH₃ reacts 3.4 moles of N₂, how many moles of NH₃ are produced if a. reacting with 3.4 moles of H₂, b. producing 6.8 moles of NH₃, c. reacting with 6.8 moles of H₂, d. producing 10.2 moles of NH₃, e. reacting with 3.4 moles of NH₃?</td>
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<td>21. How many moles of oxygen and produced in the decomposition of 45.3g of potassium chlorate (molar mass = 122.54g/mol) in the unbalanced equation below. KClO₃ → KCl + O₂</td>
<td>a. 12.25 mole</td>
<td>b. 0.45 mole</td>
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<td>22. How many molecules of water will be produced when 5.21g of methane are reacted in the following unbalanced reaction CH₄ + O₂ → CO₂ + H₂O</td>
<td>a. 3.90 X 10² molecules</td>
<td>b. 1.45 X 10²³ molecules</td>
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<td>23. Refer to the following unbalanced reaction C₂H₆ + O₂ → CO₂ + H₂O What mass of oxygen is required to react completely with 3.5g of C₂H₆?</td>
<td>a. 7.5g</td>
<td>b. 13.03g</td>
</tr>
<tr>
<td>24. How many atoms are in 5.4 moles of NO₂?</td>
<td>a. 3.25X10^24 atoms</td>
<td>b. 9.75X10^24 atoms</td>
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<td>25. Convert 25.3g of NH₃ to moles of NH₃</td>
<td>a. 2.83 mole</td>
<td>b. 2.53 mole</td>
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<tr>
<td>26. Refer to the following equation Al(OH)₃ + NaOH → NaAlO₂ + H₂O How many moles of water will be produced in 25 moles of sodium hydroxide are completely reacted?</td>
<td>a. 2 mole</td>
<td>b. 7.0 mole</td>
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<tr>
<td>27. 1.5 moles of NH₄HCO₃ react with NaCl in the equation: NaCl + NH₄HCO₃ → NaHCO₃ + NH₄Cl How many moles of NH₄Cl are formed assuming 100% yield?</td>
<td>a. 3.0 mole</td>
<td>b. 1.5 mole</td>
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<td>28. Calculate the molar mass of ammonium chloride?</td>
<td>a. 70.4g</td>
<td>b. 28.0g</td>
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<td>29. What is the mass of 1234 atoms of nitrogen?</td>
<td>a. 1.73X10⁴ g</td>
<td>b. 4.32X10⁻²⁴ g</td>
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<tr>
<td>30. 8.2 moles of fluorine contains</td>
<td>a. 0.43g</td>
<td>b. 6.02 X 10⁻²³ g</td>
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