Unit 3 Review

1. State the law of Conservation of Mass.

Balance the following chemical equations:

2. $H_2 + O_2 \rightarrow H_2O$
3. $H_2O_2 \rightarrow H_2O + O_2$
4. $Fe + O_2 \rightarrow Fe_2O_3$
5. $CH_4 + 2O_2 \rightarrow CO_2 + H_2O$
6. $CH_3OH + O_2 \rightarrow CO_2 + H_2O$
7. $CO_2 + H_2O$ (+Light) $\rightarrow C_6H_{12}O_6 + O_2$
8. $Cr + O_2 \rightarrow 2Cr_2O_3$
9. $Zn + 2HCl \rightarrow H_2 +$ _____

10. Identify the names and numbers of the atoms on the Reactants side of the following equations: $N_2 + 3H_2 \rightarrow 2NH_3$

11. Identify the names and numbers of the atoms on the Products sides of the following equations: $N_2 + 3H_2 \rightarrow 2NH_3$

Classify the following as Physical Changes or Chemical Changes:

12. Cutting hair
13. Melting butter
14. Shredding cheese
15. Souring milk
16. Toasting bread
17. Melting wax
18. Frying an egg
19. Rusting metal

20. Briefly define endothermic reaction.
21. Briefly define exothermic reaction.
22. List examples of evidence of a chemical reaction:

23. Identify the parts of a chemical equation.
24. Define chemical change.
25. Define physical change.

Identify the names of each element in the following formulas, and the number of atoms of each element:

26. $MgSO_4 7H_2O$
27. C_3H_8
28. C_2H_6
29. $18Al(OH)_3$
30. $5Cr(CO_3)_2$
31. $6Ca(NO_3)_2$
32. $6Al(OH)_3$
33. $C_6H_{12}O_6$
34. $C_9H_8O_4$
35. $Al(OH)_3$
36. $SHCo_3$
37. $NaHCo_3$
38. $NaHCO_3$
39. $NaH(CO)_3$
40. $2CH_2O$
41. $C_2H_4O_2$
42. $C_2H_2O_4$
43. $2C_2H_4O$

Boiling Points of Some Compounds

Chemical Formula	Boiling Point (°C)	Temperature Increase (°C)
CH_4	–162	—
C_2H_6	–89	73
C_3H_8	–42	47
C_4H_{10}	–1	41
C_5H_{12}	36	37
C_6H_{14}	69	33

44. Based on the data in the table, a reasonable estimate of the boiling point of the next compound (C_7H_{16}) Is _____?