

Name _____ Date _____ Time _____

No calculators **except on Section I**. Show all work for Sections II to V (no credit will be given if work is not shown). Attach additional pages if necessary clearly labeling problems.

Chemistry Math Evaluation

I. Give the answer, in scientific notation, to these problems involving scientific notation:

1. $(2.15 \times 10^3) (4.08 \times 10^4) =$

2. $(5.34 \times 10^{-5}) (7 \times 10^{10}) =$

3. $(5 \times 10^7) (8.99 \times 10^{-6}) (4.2 \times 10^4) =$

4. $(1.5 \times 10^{-7}) / (3.007 \times 10^{-5}) =$

5. $(3 \times 10^7) / (8.44 \times 10^{-6}) =$

II. Solve these problems involving ratios, proportions, and percents:

6. In a certain classroom, the ratio of boys to girls is 4 to 7. If there are 35 girls in the class, then how many total students are there?

7. The legend on a map says 0.5 inch represents 14 miles. How many inches are needed to represent 105 miles?

8. The ratio of red marbles to blue marbles is 5 to 7. If there are 156 marbles total, how many red marbles are there?

9. What is 5 percent of 12?

10. What percent of 35 is 16?

The table below is printed on the side of a box of pancake mix:

Pancakes	Amount of mix	Amount of water
6	1 cup	$\frac{3}{4}$ cup
12	2 cups	1 $\frac{1}{2}$ cups
18	3 cups	2 $\frac{1}{4}$ cups

11. What is the ratio of mix to water in each case?

12. What quantities of mix and water should be used if we want to make 15 pancakes?

13. What quantities of mix and water should be used if we want to make 100 pancakes?

III. Solve these problems using conversion factors:

14. The exchange rate this week is 1 dollar for .85 euros. If I exchange 75 dollars, how many euros will I receive?

15. A roll of Christmas gift wrap is 2.5 meters long. What is the length of the paper in mm?

Given that: $1 \text{ mi} = 1.61 \times 10^3 \text{ m}$, $1 \text{ day} = 24 \text{ hr}$, $1 \text{ hr} = 60 \text{ min}$, $1 \text{ min} = 60 \text{ sec}$, and $1 \text{ yr} = 365 \text{ days}$

16. Convert 55 miles per hour to meters/second (m/s)

IV. Solve these problems involving multiplication and division of fractions:

17. What do you get when you multiply $1/2$ and $3/7$?

18. What do you get when you divide $12/17$ by $6/7$?

19. In simplest form, what do you get when you divide $81/21$ by $27/49$?

V. Solve these problems for the variable requested:

20. Given: $g - 1 = w$; solve for: "g"

21. Given: $PV = nRT$; solve for "R"

22. Given: $p = m / v$ solve for "m"

23. Solve for x: $10x + 15 < 25 + 5x$

24. Solve for x: $-2x - 10 < 2$

25. Solve for x: $3x + 9 > -3$