

## Placement Tests

When taking the placement tests, please show all your work. Just answers will not be accepted. You may use your calculator on math and science placement tests. Some of the tests are long so you may take them over multiple days. Parents are asked to proctor the test and no kibitzing. You may be unhappy with the placement of your child in a class. If you feel that an error has been made, wish a re-test, or plan for summer tutoring please contact the teacher to discuss options. Mail/email the test to the appropriate teacher. If you need to mail it to 2 teachers, make a copy and send to both ☺ Meanwhile you can go ahead and register your student for the class and we will make an adjustment if there is an issue with the test.

**PLEASE do NOT send registrations to the teacher only the tests.** Contact me if you have any questions: Desiree Voegele [clccoop03@yahoo.com](mailto:clccoop03@yahoo.com)

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# Chemistry 1 Pretest

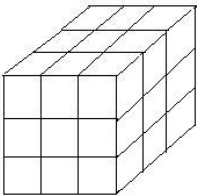

Notes: This test will give you some idea of your ability to handle the math and verbal skills and the type of thinking required for this class. You cannot fail, but if you do poorly, it will indicate you might have trouble in chemistry.

Answer all the questions. Make your best guess if you have to.

Follow all directions carefully.

Mail or give completed test to the chemistry teacher for assessment. This test is 6 pages.

**Multiple choice: Circle the entire answer.**

- $3 + 2(7 - 4) =$   
a. 9      b. 13      c. 15      d. 31
  - $2^4 =$   
a. 6      b. 8      c. 16      d. 24
  - 0.000786 written in scientific notation is  
a.  $7.86 \times 10^{-3}$       c.  $7.86 \times 10^3$   
b.  $7.86 \times 10^{-4}$       d.  $7.86 \times 10^4$
  - $9 \text{ cm}^3 =$   
 $3 \text{ cm}^2$   
a.  $3 \text{ cm}^5$       b.  $3 \text{ cm}^1$       c.  $3 \text{ cm}^{-1}$       d.  $3 \text{ cm}^{-5}$
  - If  $2a = 3b$  and  $a = 6$ , what does  $b$  equal?  
a.  $b = 2$       c.  $b = 6$   
b.  $b = 4$       d.  $b = 12$
  - Density is defined as mass per unit volume or  $D=m/v$   
Solve the density equation for the variable " $v$ ".  
a.  $v = D + m$       c.  $v = D * m$   
b.  $v = D/m$       d.  $v = m/D$
  - How many small cubes are there in the illustration?  
a. 9  
b. 18  
c. 27  
d. 81
- 
- Using a metric ruler, measure the length of this line to the nearest 0.1 cm. Write the answer on the line.  
  
\_\_\_\_\_
  - The value of a fraction is less than 1 when...  
a. Numerator > denominator  
b. Denominator > numerator  
c. Abscissa > ordinate  
d. Ordinate > abscissa
  - What is the volume of water in the graduated cylinder pictured below? \_\_\_\_\_  

  - If a variable  $X$  is *directly proportional* to variable  $Y$ , it means  
a. As  $Y$  increases,  $X$  increases  
b. As  $Y$  increases,  $X$  decreases  
c. There is no relationship between  $X$  and  $Y$
  - A *spontaneous* reaction occurs  
a. Very slowly  
b. By giving off large amounts of heat  
c. Without any outside influence  
d. Under high pressure
  - Which of the following is a unit of volume?  
a. cm      c.  $\text{ft}^3$   
b.  $\text{lb}/\text{in}^2$       d. acres

14. Which of the following is a *hypothesis*?
- The beaker has a mass of 4.65 g.
  - When the two solutions were mixed, they turned into a solid.
  - The liquid turned solid because there was a change in the molecular structure.
  - The solid turned back into a liquid when it was heated.

15. Ounce is to pound as centigram is to ...
- centimeter
  - gram
  - milligram
  - ounce

16. An *aqueous* solution
- Is pale blue-green in color
  - Does not leave a solid when evaporated
  - Contains dissolved solids
  - Is dissolved in water

17.  $\frac{1}{2}$  divided by  $\frac{1}{4}$  =
- $\frac{1}{2} / \frac{1}{4}$
  - 0.5/0.25
  - 0.25/0.5
  - both a and b
  - both a and c

18. How should a child be dressed to play outside if it is 35.0 degrees Celsius? \_\_\_\_\_.

### Vocabulary and Miscellaneous

19. The formula for water is \_\_\_\_\_.
20. Express the speed of light, 300000000m/s in scientific notation.  
\_\_\_\_\_
21. 10 is to 5 as 100 is to \_\_\_\_\_.
22. How many milliliters in 1 liter? \_\_\_\_\_.
23. How many grams in a kilogram? \_\_\_\_\_.
24. How many centimeters in a meter? \_\_\_\_\_.
25. What is the metric prefix for 1/1000? \_\_\_\_\_.
26. What is the metric prefix for 1/10? \_\_\_\_\_.
27. How many significant figures in the following numbers?
- 4060 \_\_\_\_\_.
  - 10.00 \_\_\_\_\_.
  - 0.00394 \_\_\_\_\_.
28. The metric unit for length is the \_\_\_\_\_.
29. The metric unit for mass is the \_\_\_\_\_.

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Math Assessment: Show all your work on these pages. Use a calculator for all calculations. Circle your answers.

30. If a dollar is worth 0.02 bars of "pressed latinum", how many dollars will you get in exchange for 200 bars?

31. On the planet Rigel-4 a relationship often used by students is: rads is equal to figs times quarks. When this relationship is solved for figs, one would get:

32. Assume that five of thirty students earn A's in this class. What percentage of students earned A's?

33. Julian is two years more than twice as old as Yuara. The sum of their ages is 86. How old are they?
34. If  $(x+4)/y = z$ , what does  $x$  equal (solve for one variable in terms of the others.)
35. The formula for sulfuric acid is  $H_2SO_4$ . How many atoms of oxygen are in  $4H_2SO_4$ ?
36. In the equation  $y = ax^2 + bx + c$ , find the value of  $y$  when  $x = 2$ ,  $a = 1$ ,  $b = 3$  and  $c = 5$ .
37. Simplify this expression:  $(x + y) / (x^2 + 2xy + y^2)$
38. Jenny has been collecting change. She has 5 fewer quarters than nickels in her bank. If she has \$5.95 in quarters and nickels, how many nickels does she have?
39. Evaluate this expression:  $6 - 3(x - 3)$  when  $x=5$
40. Evaluate this expression:  $4x^2 - 5x + 1$  when  $x = -2$ .

41. Simplify each expression below:

a.  $y(y - 3)$

b.  $(x + 2)(x - 6)$

c.  $(5x^2)(x^3)(-7x)$

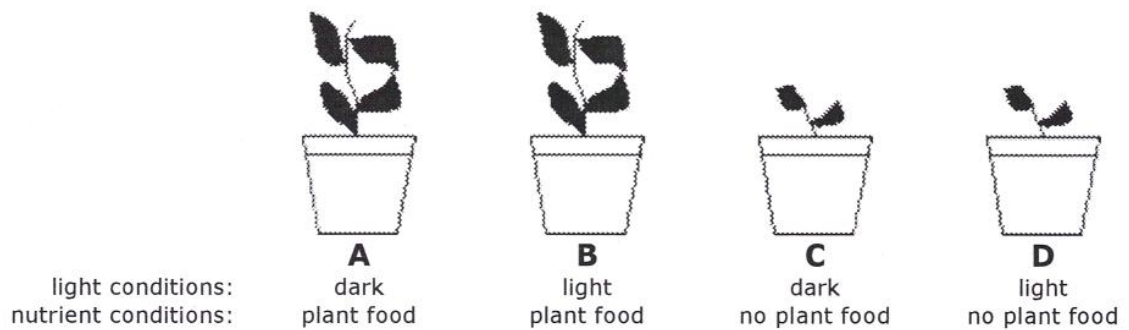
42. Solve each equation below:

a.  $12(x - 1) = 8(x + 1)$

b.  $5[1 - 2(x + 2)] = 4x$

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A biology student conducted an experiment to find out how light and plant food affect the growth of a particular type of plant. She grew four plants and treated the differently. After 3 weeks, the plants looked as shown below. Study the growing conditions and drawing and answer the next 2 questions.



43. This experiment shows that

- Both light and plant food affect the growth of the plants.
- Neither light nor food are factors affecting the growth of the plants.
- The greatest factor affecting the growth of this plant is plant food, not light.
- Plants grow better with light, but plant food does not affect them.

44. To show the effects of plant food on the growth of these plants, you should compare

- Plants A and D
- Plants A and B
- Plants C and D
- Plants B and D

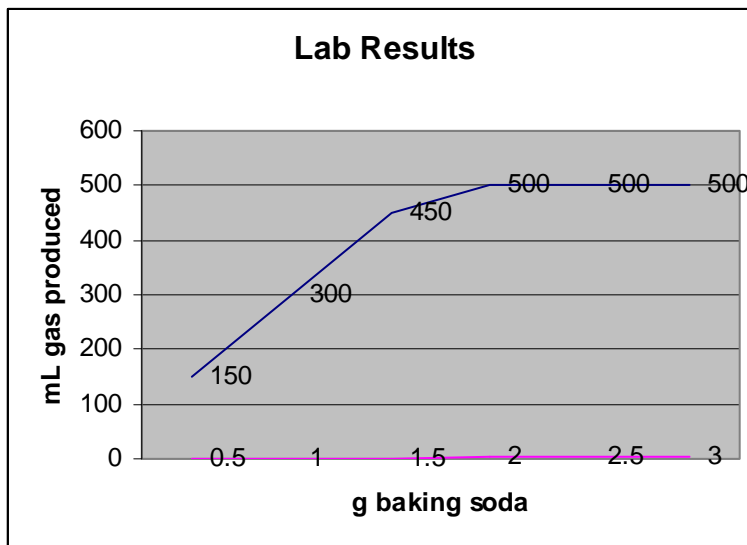
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Some chemistry students designed an experiment to see how different metals react with strong and weak acids. They have added small amounts of metal filings (copper and iron) to beakers containing different acids (concentrated and dilute sulfuric and hydrochloric acids). They have carefully recorded the experimental conditions below. Use this data to answer the next 2 questions.

Beaker	Metal	Acid
A	Iron	Dilute sulfuric
B	Copper	Dilute sulfuric
C	Iron	Concentrated sulfuric
D	Copper	Concentrated sulfuric
E	Iron	Dilute hydrochloric
F	Copper	Dilute hydrochloric
G	Iron	Concentrated hydrochloric
H	Copper	Concentrated hydrochloric

45. To observe the effect of how different metals react, the students should compare
- A and B or E and F
  - B and C or F and G
  - A and D or E and H
  - C and H or D and G
46. Which of the following would be a correct procedure for the students to follow?
- Compare E and H to see if the reaction rate depends on the strength of the acid.
  - Compare A and D to see if the reaction rate depends on which metal is added to the acid.
  - Compare A and C to see if the reaction rate depends on the strength of the acid.
  - Compare A and H to see if the reaction rate depends on which acid is used.
- 
47. If brass is 25% (by weight) copper, how many grams of copper are in 12 grams of brass?
- 3 g
  - 37 g
  - 48 g
  - 300 g
48. A student used a plain piece of paper (such as this one) to cut out two figures: a circle with a diameter of 4 inches and a square 4 inches on a side. Which figure would weigh more?
- The 4" circle weighs more
  - The 4" square weighs more
  - They weigh the same
  - There is no way to predict
49. A biologist used a microscope to measure two different kinds of cells. Cell A was 12 micrometers in diameter and cell B was 20 micrometers in diameter. She then took a photograph of the two cells. In the photograph, cell A measured 15 cm in diameter. What was the diameter of cell B in the photograph?
- 18 cm
  - 20 cm
  - 23 cm
  - 25 cm

When baking soda is added to vinegar, the solution produces a gas (carbon dioxide). A student is trying to see if there is a relationship between the amount of baking soda added and the amount of gas produced. He added different amounts of baking soda (0.5 g – 3.0 g in 0.5 g increments) to 25 mL of vinegar in a test tube and collected the gas in a balloon. The data is graphed below. Use the graph to answer the next two questions.



50. What is a valid conclusion to draw from this data?

- a. The amount of gas produced continues to increase as the amount of baking soda increases.
- b. Adding more baking soda than 2.0 g does not result in additional gas production.
- c. The amount of gas produced depends only on the amount of vinegar in the test tube.
- d. There is no relationship between the amount of gas produced and baking soda added.

51. What would be a valid conclusion if the student had added baking soda in the range of 0.5 – 1.5 g only?

- a. The amount of gas produced continues to increase as the amount of baking soda increases.
- b. Adding more baking soda than 2.0g does not result in additional gas production.
- c. The amount of gas produced depends only on the amount of vinegar in the test tube.
- d. There s no relationship between the amount of gas produced and baking soda added.

52. In the space below construct a simple graph to represent the distance a car moving at 60 mph will travel.