

COLLEGE-PREP CHEMISTRY
Worksheet - Mathematics in Chemistry

1. Assume that the Mitchell swimming pool measures 75 meters in length, 30.0 meters in width, and averages 2.0 m in depth. How many gallons of water does it take to fill the pool?
2. A class of 22 students is doing a lab that requires 3.2 g of NaCl for each student. If the instructor sets out a one-pound container of NaCl, how much, in pounds, will be left in the container?
3. Gas costs \$1.15 per gallon. Your car gets 21 miles per gallon. If you drive for 4 hours at 60 miles per hour, how much will the trip cost?
4. The circumference of the earth is 24,902 miles. If the average density of the earth is 5.52 g/cu. cm, calculate the total *mass* of the earth.
Volume of a sphere = $\frac{4}{3} \pi r^3$
5. If the density of lead is 11.3 g/cu. cm, what is the *mass* of a bar that measures 3.0 cm x 4.0 cm x 12.8 cm?
6. The following information is given in a science supply catalog:
60 rubber stoppers = 500.0 g = \$4.89

Each student in a class will need 4 stoppers. There are 24 students in the class. What mass of stoppers must be ordered and what will be the cost?
7. The speed of a skyrocket is measured and found to be 145.5 m/s. What is the rocket's speed in km/hr?
8. An aquarium filter will clean 275 cu. cm of water per minute. How long will it take to filter 125 cu. dm of dirty water?
9. A light-year is the distance light can travel in one year. If the sun is 1.5×10^8 kilometers away, how many light years is the sun from the earth? Assume that light travels at a speed of 3.0×10^{10} cm/s
10. Obtain several graduated cylinders, a chemical balance, and a meter stick. Learn how to read each device to the correct significant digits.

PERFORM THE FOLLOWING CALCULATIONS:

11. $(3.4 \times 10^{11})(4.5 \times 10^{13})(2.9 \times 10^{-8})$

12.
$$\frac{(8.4 \times 10^{-9})(1.7 \times 10^{16})}{(3.5 \times 10^5)(6.0 \times 10^{-8})}$$

13. $(7.8 \times 10^{15}) + (3.6 \times 10^{14})$

14. $(1.1 \times 10^4) + (2.2 \times 10^3) - (1.7 \times 10^4)$

15. Write the following numbers in scientific notation:

A. 391,000,000,000

B. .000000018

16. Solve for X: $\frac{3}{4} TP = \frac{1}{2} \times Q$

17. Solve for V: $pV = nrt$

18. How many mm are in 300 ft.? (Express your answer in scientific notation.)