

Measurements and Calculations

Mixed Metric and American Conversions: Show ALL work, using dimensional analysis, and answer in scientific notation.

- 0.014 kilograms to centigrams
- 4.305 liters to milliliters
- 61.2 microliters to milliliters
- 5.48 centimeters to millimeters
- 3.80 km to meters
- 40.6 decimeters to decameters
- 3.88 miles to hectometers
- 2.994 ounces to milligrams
- 926 tons to Megagrams
- How many centimeters are there in 7.88×10^2 feet?
- Convert 6.775 yards to picometers.
- Convert 5.47×10^{-2} hectograms to ounces
- How many centimeters are there in 51.004 miles

Density: Show ALL work, use dimensional analysis when necessary.

- If an unknown solid weighs 84.0 grams and occupies 30.0 cm^3 of space, what is its density?
- What is the mass of a liquid having a density of 1.50 g/ml and a volume of 3.5 liters?
- What volume would a 200 gram sample of gold have if its density is known to be 20.5 g/cm^3 ?
- A solid block of substance is 74.0 cm by 55.0 cm by 29.0 cm and it weighs 625 kg. Assuming that it did not chemically react with water nor dissolve in it, would it float in water? Show your work.
- A gas has a volume of 7.0 liters and a mass of 4.44×10^5 micrograms. What is its density?
- A certain liquid has a density of 0.855 g/ml. How many LITERS would weigh 1.00 kg?

AP Chem Summer Assignment Worksheet #1

Dimensional Analysis (Exercising Problem Solving Skills): Show ALL work, using dimensional analysis, Report answers using the correct number of significant figures.

20. The record long jump is 349.5 inches. Convert this to meters. There are 2.54 cm in an inch.
21. A car traveling 55.0 miles per hour. Convert this to meters per second. 1 mile = 1.61 km.
22. How many milligrams are there in a 5.00 grain aspirin tablet? 1 grain = 0.00229 ounces. There are 454 grams/pound and 16.0 ounces/pound.
23. Mercury has a density of 13.54 g/mL. How many milliliters would 100. grams fill?
24. In 1980, the US produces 18.4 billion pounds (1.84×10^{10} lbs) of phosphoric acid to be used in the manufacture of fertilizer. The average cost of the acid is \$318/ton. (1 ton = 2000 lbs) What was the total value of the phosphoric acid produced?
25. On planet Zizzag, city Astric is 35.0 digs from city Betrek. The latest in teenage transportation is a Zeka which can travel a maximum of 115 millidigs/zip. On Zizzag their time system divides each dyne into 25.0 zips. How many dyne will it take Pezzi to get from Astric to Betrek to see his girlfriend?
26. While prospecting in the North Woods, Joe found a gold nugget which had a density of 19.2 g/cm³. Joe dropped the gold into water in a graduated cylinder, the water level increased by 15.0 mL. How many grams of gold did he have?
27. Light travels at a speed of 3.00×10^{10} cm/sec. What is the speed of light in km/hr?
28. A cheetah has been clocked at 112 km/hr over a 100. meter distance. What is this speed in m/sec?