

These problems are intended to *supplement* the problems in the textbook, not *replace* them.

**Questions**

1. Convert 172 inches to millimeters.
2. Convert  $6.2 \times 10^{13}$  nanometers to miles.
3. Convert 379.6 tons to centigrams (not metric tons).
4. How many milliliters are there in 12.6 gallons?
5. How many ounces are there in 3.471 micrograms?
6. How many yards are there in  $5.62 \times 10^4$  kilometers?
7. Convert 68.2 °F to Celsius.
8. Convert -443.62 °F to Kelvin.
9. Convert 12.94 °C to Fahrenheit.
10. Convert 976 K to Celsius.
11. Convert 25.66 K to Fahrenheit.
12. Convert 397.6 °C to Kelvin.
13. 0.00244 microliters to cubic angstroms.
14. A fathom is a unit of length usually used to describe water depth. One fathom is equal to 1.8288 meters. Convert 75 cubic fathoms to liters.
15. Convert  $3.00 \times 10^8$  meters per second to miles per hour.
16. Convert 37.64 pounds per cubic foot to grams per liter.
17. What is the density of lead sulfide if a sample has a mass of 12.4 g and a volume of  $1.64 \text{ cm}^3$ ?
18. What is the density of a particular type of plastic if a solid block of it measures  $15.5 \text{ cm} \times 4.60 \text{ cm} \times 1.78 \text{ cm}$  and has a mass of 98 g?
19. The density of gasoline is 0.70 g/mL. What is the mass of a tankful of gasoline if the tank holds 12.0 gallons?
20. The density of bromine is 3.12 g/mL. What volume is needed to give 1.25 ounces of bromine? Note - these are MASS ounces, not fluid ounces (volume).
21. What is the mass of 176 cubic inches of iodine (density = 4.93 g/mL)?
22. What is the volume, in gallons, of 54 pounds of water?
23. The diameter of a chlorine atom is 200 pm. How many chlorine atoms lined up end to end would form a line 1.0 inch long?

24. The distance from the Earth to the sun is  $9.3 \times 10^7$  miles. The speed of light is  $3.00 \times 10^8$  m/s. How long (in minutes) does it take light from the sun to reach us?
25. The contents of one 40.0 pound bag of topsoil will cover 10.0 square feet of ground to a depth of 1.0 inch. How many bags are needed to cover a plot which measures  $2.2 \text{ m} \times 1.5 \text{ m}$  to a depth of 4.0 cm?
26. 16-gauge wire has a diameter of 0.0508 in. Calculate the length, in meters, of a 12.0 pound piece of 16-gauge copper wire. The density of copper is 8.92 g/mL. The volume of a cylinder is  $\pi r^2 L$ .

### Answers

If you cannot figure out how to get the correct answer, go to your instructor, Science Tutoring Center, SI, etc.

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|------------------------------|--|-------------------------------------|
| 1. $4.37 \times 10^3$ mm     | 10. 703 °C                               | 19. $3.2 \times 10^4$ g or 32 kg    |
| 2. 39 miles                  | 11. $-413.48$ °F                         | 20. 11.4 mL                         |
| 3. $3.444 \times 10^{10}$ cg | 12. 670.8 K                              | 21. $1.42 \times 10^4$ g or 14.2 kg |
| 4. $4.77 \times 10^4$ mL     | 13. $2.44 \times 10^{18}$ Å <sup>3</sup> | 22. 6.5 gal                         |
| 5. $1.224 \times 10^{-7}$ oz | 14. $4.6 \times 10^5$ L                  | 23. $1.3 \times 10^8$ atoms         |
| 6. $6.15 \times 10^7$ yards  | 15. $6.71 \times 10^8$ mi/h              | 24. 8.3 minutes                     |
| 7. 20.1 °C                   | 16. 602.9 g/L                            | 25. 6 bags                          |
| 8. 8.92 K                    | 17. 7.56 g/cm <sup>3</sup>               | 26. 467 m                           |
| 9. 55.29 °F                  | 18. 0.77 g/cm <sup>3</sup>               |                                     |