*Solve the following problems. Use the table on the back of this page to locate the density data.*

1. What is the density of a rock if a 75.5 g sample displaces 18.6 mL of water?

2. The density of a liquid is 0.821 g/mL. What is the mass of 71.3 mL of this liquid?

3. What is the mass of a piece of copper with a volume of 15.0 cm3?

4. Which has more mass a 5 cm3 piece of calcium or a 5 cm3 piece of magnesium?

5. What is the volume of 18 g of gold?

6. What is the volume of 10.0 g of P?

7. What is the volume of 27 g of water?

8. Which elements below will float in water? … float in mercury?

Al K S C Mg Pt

9. Carbon tetrachloride, CCl4, does not dissolve in water, and forms a layer when the two are mixed. *8.5 mL of CCl4 has a mass of 13.5 g.*

1. What is the density of carbon tetrachloride?
2. Does CCl4 sink or float in water?
3. Is there any element that will sink in water but float in CCl4? (If so, name it/them)

10. When a 55 **kg** person dives into a pool of water, how many **liters** of water will be displaced? The density of the human body is about 0.90 g/mL.

***Density Reference Values***

|  |  |  |
| --- | --- | --- |
| ***0.0899 g/L*** | [***Hydrogen***](http://environmentalchemistry.com/yogi/periodic/H.html) | ***H***  *These are gases. Their densities are listed on a different scale and should not be included in your answers.* |
| ***0.1785 g/L*** | [***Helium***](http://environmentalchemistry.com/yogi/periodic/He.html) | ***He*** |
| ***0.9 g/L*** | [***Neon***](http://environmentalchemistry.com/yogi/periodic/Ne.html) | ***Ne*** |
| ***1.2506 g/L*** | [***Nitrogen***](http://environmentalchemistry.com/yogi/periodic/N.html) | ***N*** |
| ***1.429 g/L*** | [***Oxygen***](http://environmentalchemistry.com/yogi/periodic/O.html) | ***O*** |
| ***1.696 g/L*** | [***Fluorine***](http://environmentalchemistry.com/yogi/periodic/F.html) | ***F*** |
| ***1.7824 g/L*** | [***Argon***](http://environmentalchemistry.com/yogi/periodic/Ar.html) | ***Ar*** |
| ***3.214 g/L*** | [***Chlorine***](http://environmentalchemistry.com/yogi/periodic/Cl.html) | ***Cl*** |
| ***3.75 g/L*** | [***Krypton***](http://environmentalchemistry.com/yogi/periodic/Kr.html) | ***Kr*** |
| ***5.9 g/L*** | [***Xenon***](http://environmentalchemistry.com/yogi/periodic/Xe.html) | ***Xe*** |
| ***9.73 g/L*** | [***Radon***](http://environmentalchemistry.com/yogi/periodic/Rn.html) | ***Rn*** |
| 0.534 g/mL | [Lithium](http://environmentalchemistry.com/yogi/periodic/Li.html) | Li |
| 0.862 g/mL | [Potassium](http://environmentalchemistry.com/yogi/periodic/K.html) | K |
| 0.971 g/mL | [Sodium](http://environmentalchemistry.com/yogi/periodic/Na.html) | Na |
| 1.55 g/mL | [Calcium](http://environmentalchemistry.com/yogi/periodic/Ca.html) | Ca |
| 1.63 g/mL | [Rubidium](http://environmentalchemistry.com/yogi/periodic/Rb.html) | Rb |
| 1.738 g/mL | [Magnesium](http://environmentalchemistry.com/yogi/periodic/Mg.html) | Mg |
| 1.82 g/mL | [Phosphorus](http://environmentalchemistry.com/yogi/periodic/P.html) | P |
| 1.848 g/mL | [Beryllium](http://environmentalchemistry.com/yogi/periodic/Be.html) | Be |
| 1.873 g/mL | [Cesium](http://environmentalchemistry.com/yogi/periodic/Cs.html) | Cs |
| 2.07 g/mL | [Sulfur](http://environmentalchemistry.com/yogi/periodic/S.html) | S |
| 2.26 g/mL | [Carbon](http://environmentalchemistry.com/yogi/periodic/C.html) | C |
| 2.33 g/mL | [Silicon](http://environmentalchemistry.com/yogi/periodic/Si.html) | Si |
| 2.34 g/mL | [Boron](http://environmentalchemistry.com/yogi/periodic/B.html) | B |
| 2.54 g/mL | [Strontium](http://environmentalchemistry.com/yogi/periodic/Sr.html) | Sr |
| 2.702 g/mL | [Aluminum](http://environmentalchemistry.com/yogi/periodic/Al.html) | Al |
| 2.99 g/mL | [Scandium](http://environmentalchemistry.com/yogi/periodic/Sc.html) | Sc |
| 3.119 g/mL | [Bromine](http://environmentalchemistry.com/yogi/periodic/Br.html) | Br |
| 3.59 g/mL | [Barium](http://environmentalchemistry.com/yogi/periodic/Ba.html) | Ba |
| 4.47 g/mL | [Yttrium](http://environmentalchemistry.com/yogi/periodic/Y.html) | Y |
| 4.54 g/mL | [Titanium](http://environmentalchemistry.com/yogi/periodic/Ti.html) | Ti |
| 4.79 g/mL | [Selenium](http://environmentalchemistry.com/yogi/periodic/Se.html) | Se |
| 4.93 g/mL | [Iodine](http://environmentalchemistry.com/yogi/periodic/I.html) | I |
| 5.24 g/mL | [Europium](http://environmentalchemistry.com/yogi/periodic/Eu.html) | Eu |
| 5.323 g/mL | [Germanium](http://environmentalchemistry.com/yogi/periodic/Ge.html) | Ge |
| 5.5 g/mL | [Radium](http://environmentalchemistry.com/yogi/periodic/Ra.html) | Ra |
| 5.72 g/mL | [Arsenic](http://environmentalchemistry.com/yogi/periodic/As.html) | As |
| 5.907 g/mL | [Gallium](http://environmentalchemistry.com/yogi/periodic/Ga.html) | Ga |
| 6.11 g/mL | [Vanadium](http://environmentalchemistry.com/yogi/periodic/V.html) | V |
| 6.15 g/mL | [Lanthanum](http://environmentalchemistry.com/yogi/periodic/La.html) | La |
| 6.24 g/mL | [Tellurium](http://environmentalchemistry.com/yogi/periodic/Te.html) | Te |
| 6.51 g/mL | [Zirconium](http://environmentalchemistry.com/yogi/periodic/Zr.html) | Zr |
| 6.684 g/mL | [Antimony](http://environmentalchemistry.com/yogi/periodic/Sb.html) | Sb |
| 6.77 g/mL | [Praseodymium](http://environmentalchemistry.com/yogi/periodic/Pr.html) | Pr |
| 6.77 g/mL | [Cerium](http://environmentalchemistry.com/yogi/periodic/Ce.html) | Ce |
| 6.9 g/mL | [Ytterbium](http://environmentalchemistry.com/yogi/periodic/Yb.html) | Yb |
| 7.01 g/mL | [Neodymium](http://environmentalchemistry.com/yogi/periodic/Nd.html) | Nd |
| 7.13 g/mL | [Zinc](http://environmentalchemistry.com/yogi/periodic/Zn.html) | Zn |
| 7.19 g/mL | [Chromium](http://environmentalchemistry.com/yogi/periodic/Cr.html) | Cr |
| 7.3 g/mL | [Promethium](http://environmentalchemistry.com/yogi/periodic/Pm.html) | Pm |
| 7.31 g/mL | [Indium](http://environmentalchemistry.com/yogi/periodic/In.html) | In |
| 7.31 g/mL | [Tin](http://environmentalchemistry.com/yogi/periodic/Sn.html) | Sn |
| 7.43 g/mL | [Manganese](http://environmentalchemistry.com/yogi/periodic/Mn.html) | Mn |
| 7.52 g/mL | [Samarium](http://environmentalchemistry.com/yogi/periodic/Sm.html) | Sm |
| 7.874 g/mL | [Iron](http://environmentalchemistry.com/yogi/periodic/Fe.html) | Fe |
| 7.895 g/mL | [Gadolinium](http://environmentalchemistry.com/yogi/periodic/Gd.html) | Gd |
| 8.23 g/mL | [Terbium](http://environmentalchemistry.com/yogi/periodic/Tb.html) | Tb |
| 8.55 g/mL | [Dysprosium](http://environmentalchemistry.com/yogi/periodic/Dy.html) | Dy |
| 8.57 g/mL | [Niobium](http://environmentalchemistry.com/yogi/periodic/Nb.html) | Nb |
| 8.65 g/mL | [Cadmium](http://environmentalchemistry.com/yogi/periodic/Cd.html) | Cd |
| 8.8 g/mL | [Holmium](http://environmentalchemistry.com/yogi/periodic/Ho.html) | Ho |
| 8.9 g/mL | [Cobalt](http://environmentalchemistry.com/yogi/periodic/Co.html) | Co |
| 8.9 g/mL | [Nickel](http://environmentalchemistry.com/yogi/periodic/Ni.html) | Ni |
| 8.96 g/mL | [Copper](http://environmentalchemistry.com/yogi/periodic/Cu.html) | Cu |
| 9.07 g/mL | [Erbium](http://environmentalchemistry.com/yogi/periodic/Er.html) | Er |
| 9.3 g/mL | [Polonium](http://environmentalchemistry.com/yogi/periodic/Po.html) | Po |
| 9.32 g/mL | [Thulium](http://environmentalchemistry.com/yogi/periodic/Tm.html) | Tm |
| 9.75 g/mL | [Bismuth](http://environmentalchemistry.com/yogi/periodic/Bi.html) | Bi |
| 9.84 g/mL | [Lutetium](http://environmentalchemistry.com/yogi/periodic/Lu.html) | Lu |
| 10.07 g/mL | [Actinium](http://environmentalchemistry.com/yogi/periodic/Ac.html) | Ac |
| 10.22 g/mL | [Molybdenum](http://environmentalchemistry.com/yogi/periodic/Mo.html) | Mo |
| 10.5 g/mL | [Silver](http://environmentalchemistry.com/yogi/periodic/Ag.html) | Ag |
| 11.35 g/mL | [Lead](http://environmentalchemistry.com/yogi/periodic/Pb.html) | Pb |
| 11.5 g/mL | [Technetium](http://environmentalchemistry.com/yogi/periodic/Tc.html) | Tc |
| 11.724 g/mL | [Thorium](http://environmentalchemistry.com/yogi/periodic/Th.html) | Th |
| 11.85 g/mL | [Thallium](http://environmentalchemistry.com/yogi/periodic/Tl.html) | Tl |
| 12.02 g/mL | [Palladium](http://environmentalchemistry.com/yogi/periodic/Pd.html) | Pd |
| 12.37 g/mL | [Ruthenium](http://environmentalchemistry.com/yogi/periodic/Ru.html) | Ru |
| 12.41 g/mL | [Rhodium](http://environmentalchemistry.com/yogi/periodic/Rh.html) | Rh |
| 13.31 g/mL | [Hafnium](http://environmentalchemistry.com/yogi/periodic/Hf.html) | Hf |
| 13.5 g/mL | [Curium](http://environmentalchemistry.com/yogi/periodic/Cm.html) | Cm |
| 13.546 g/mL | [Mercury](http://environmentalchemistry.com/yogi/periodic/Hg.html) | Hg |
| 13.67 g/mL | [Americium](http://environmentalchemistry.com/yogi/periodic/Am.html) | Am |
| 14.78 g/mL | [Berkelium](http://environmentalchemistry.com/yogi/periodic/Bk.html) | Bk |
| 15.1 g/mL | [Californium](http://environmentalchemistry.com/yogi/periodic/Cf.html) | Cf |
| 15.4 g/mL | [Protactinium](http://environmentalchemistry.com/yogi/periodic/Pa.html) | Pa |
| 16.65 g/mL | [Tantalum](http://environmentalchemistry.com/yogi/periodic/Ta.html) | Ta |
| 18.95 g/mL | [Uranium](http://environmentalchemistry.com/yogi/periodic/U.html) | U |
| 19.32 g/mL | [Gold](http://environmentalchemistry.com/yogi/periodic/Au.html) | Au |
| 19.35 g/mL | [Tungsten](http://environmentalchemistry.com/yogi/periodic/W.html) | W |
| 19.84 g/mL | [Plutonium](http://environmentalchemistry.com/yogi/periodic/Pu.html) | Pu |
| 20.2 g/mL | [Neptunium](http://environmentalchemistry.com/yogi/periodic/Np.html) | Np |
| 21.04 g/mL | [Rhenium](http://environmentalchemistry.com/yogi/periodic/Re.html) | Re |
| 21.45 g/mL | [Platinum](http://environmentalchemistry.com/yogi/periodic/Pt.html) | Pt |
| 22.4 g/mL | [Iridium](http://environmentalchemistry.com/yogi/periodic/Ir.html) | Ir |
| 22.6 g/mL | [Osmium](http://environmentalchemistry.com/yogi/periodic/Os.html) | Os |