*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  |