1.28

1.28 A *hydrometer* is used to measure the specific gravity of liquids. (See Video V2.8.) For a certain liquid a hydrometer reading indicates a specific gravity of 1.15. What is the liquid's density and specific weight? Express your answer in SI units.

$$SG = \frac{\rho}{\rho_{H_2O\ @\ 4\ ^\circ C}}$$

$$1.15 = \frac{\rho}{1000\ \frac{kg}{m^3}}$$

$$\rho = (1.15)\left(1000\ \frac{kg}{m^3}\right) = \underline{\underline{1150\ \frac{kg}{m^3}}}$$

$$\gamma = \rho g = \left(1150\ \frac{kg}{m^3}\right)\left(9.81\ \frac{m}{s^2}\right) = \underline{\underline{11.3\ \frac{kN}{m^3}}}$$