Sandstone quarry

The sandstone in water is buoyed up by the weight of the displaced fluid. The weights in air and in water are

$$W_a = \rho_{SS} V g \qquad \text{and} \qquad W_w = (\rho_{SS} - \rho_w) V g,$$

so

$$\frac{W_w}{W_a} = \frac{\rho_{SS} - \rho_w}{\rho_{SS}} = 1 - \frac{\rho_w}{\rho_{SS}}.$$

Thus

$$\rho_{SS} = \frac{\rho_w}{1 - W_w/W_a} = 2.22 \times 10^3 \text{ kg/m}^3.$$

Grading: There are many ways to solve this problem. Any of them earn full credit.