

3. The pressure due to a column of fluid is calculated as the product of the height of the fluid times the density of the fluid times the acceleration due to gravity. For water the density is $d = 1000 \text{ kg / m}^3$.

$$\Delta P = d h g$$

$$\Delta P = (1000 \text{ kg / m}^3) (3.0 \text{ m}) (9.8 \text{ m / s}^2)$$

$$\Delta P = 29400 \text{ kg m}^2 / \text{m}^3 \text{ s}^2$$

To simplify the units we cancel one m term in the m^2 term in the numerator and one m term in the m^3 term in the denominator to get

$$\Delta P = 29400 \text{ kg m / s}^2 \text{ m}^2$$

We know that $1\text{N} = 1 \text{ kg m / s}^2$ so we can write

$$\Delta P = 29400 \text{ N / m}^2 = 29400 \text{ Pa}$$