Pressure in Liquids Calculations

Use g = 10 N/kg

These questions are based on swimming pools, lakes, submarines, oil tanks and deep-sea exploration. Some questions require you to rearrange the equation.

1. A child dives to a depth of 1.5 m in a swimming pool. The density of water is 1000 kg/m³. Calculate the pressure due to the water.
2. A phone is dropped into the deep end of a pool, 2.8 m below the surface. Calculate the water pressure acting on it.
3. A diver swims 6.0 m below the surface of a freshwater lake. Calculate the pressure due to the water at this depth.
4. A fish swims near the bottom of a 12 m deep reservoir. The density of freshwater is 1000 kg/m³. Calculate the pressure acting on the fish due to the water above it.
5. A submarine is 40 m below the surface of the sea. Seawater has a density of 1030 kg/m³. Calculate the pressure due to the seawater.
6. A diver in a lake experiences a water pressure of 90 000 Pa. The density of water is 1000 kg/m³. Calculate the depth of the diver.
7. The pressure at the bottom of a tank of oil is 64 000 Pa. The oil has a density of 800 kg/m³. Calculate the depth of the oil.
8. A sensor at the bottom of a tank experiences a pressure of 108 000 Pa. The liquid is 9.0 m deep. Calculate the density of the liquid.
9. A deep-sea research probe can withstand a water pressure of 2 060 000 Pa. Seawater has a density of 1030 kg/m³. Calculate the maximum safe depth of the probe.
10. An underwater viewing tunnel is moved from a depth of 5.0 m to a depth of 10.0 m in seawater with a density of 1030 kg/m³. Calculate the pressure at 5.0 m, the pressure at 10.0 m, and determine by what factor the pressure increases.