A dam 15 m high holds the water in a reservoir. For safety reasons, the water level is maintained at a height 3 m below the top of the dam. At the base of the dam, engineers have installed a vertical door in the shape of an equilateral triangle with sides of length 3 m, as shown in the diagram below. Calculate the total hydrostatic force on the door. Your solution must be clear and complete. You must define clearly in words each of the variables used and indicate their meaning on the diagram. The density of water is $\rho = 1000$ kg/m^3 and the acceleration due to gravity is $g = 9.8$ m/s^2.