The National Orthodox School Shmaisani

The National Orthodox School /Shmaisani

Subject: Science/ Physics

Name: Katch is abusing his permissions ostaz
Title: Pressure Homework

Date: **Grade-Section: 9IB**

Question 1) A block of weight 1200N has a length of 0.2 m and a width of 0.4 m and a height of 0.3 m.

a) Find the smallest pressure that this block exerts on the ground.

0.3*0.4=0.12

1200/0.12=10kpa

Smallest=10kpa

b) Find the largest pressure that this block exerts on the ground.

0.2*0.3=0.06

1200/0.06=20kpa

Question 2) The force applied to a 0.25 cm by 0.75 cm brake pad produces a pressure of 500 N/cm². Calculate the force applied to the brake pad.

0.1875 cm2 = 0.25 cm * 0.75 cm

Force = Area * Pressure = 500 N/cm2 * 0.1875 cm2 = 93.75 N

F= 93.75 N.

Question 3) A swimming pool contains water with a density of $10^3 kg/m^3$. Calculate the pressure due to the water at a depth of 2.5 m. Ignore the effect of the atmosphere.

Pressure = 103 kg/m3 * 9.8 * 2.5 m = 24500 N/m2 = 24.5 kPa.

Question 4) A swimming pool contains olive oil with a density of $895\ kg/m^3$. Calculate the pressure due to the oil at a depth of 1.75 m. Ignore the effect of the atmosphere.

Pressure = 895 kg/m^3 * 9.8 * 1.75 m = 16205 N/m^2 = 16.2 kPa

Question 5) A swimming pool contains water with a density of $10^3 kg/m^3$. Calculate the height that a pressure due to the water at of $1.5 \times 10^4 Pa$ takes place. Ignore the effect of the atmosphere.

h = P / (ρ * g) = (1.5 × 10^4 Pa) / (10^3 kg/m³ * 9.8) = 15.306 m

Question 6) A man of mass 80 kg is standing on the beach, knowing that the area of his foot is 8 cm2. What is the pressure he is exerting on the sand?

$P = 784\ N / 0.0008\ m^2 = 9.8 \times 10^5\ N/m^2 = 9.8 \times 10^5\ Pa$