

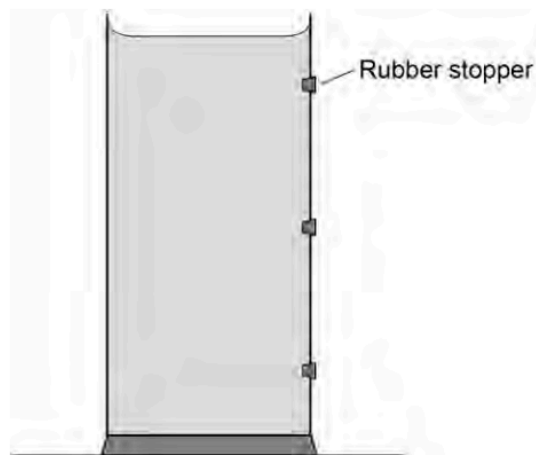
Q1.(2018)

a)

Figure 11 shows a container filled with water.

The three holes in the side of the container are sealed with rubber stoppers.

Figure 11



The water exerts a force of 27 N on the bottom of the container.

The cross-sectional area of the bottom of the container is 0.009 m².

Calculate the pressure exerted by the water on the bottom of the container.

Use the equation:

$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

Choose the unit.

[3 marks]

kg/m³	N/m	Pa
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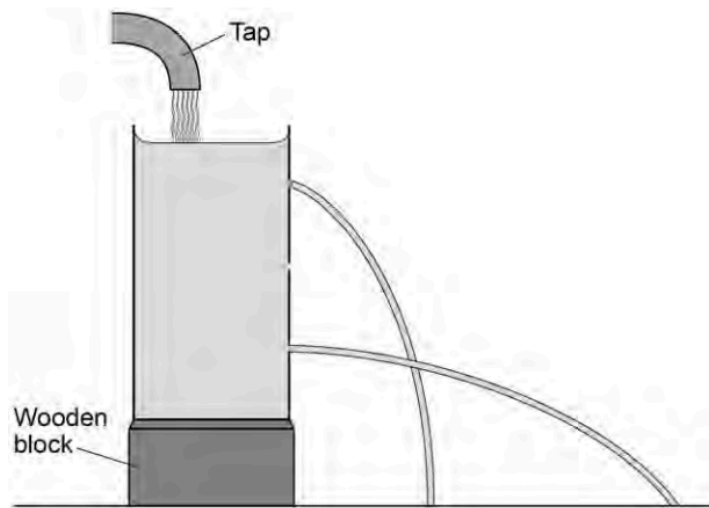
Pressure = _____ Unit _____

b)

The container is put under running water from a tap and the three rubber stoppers removed.

Figure 12 shows the path taken by the water escaping from the top and bottom holes.

Figure 12



Complete **Figure 12** to show the path taken by the water escaping from the centre hole.

[1 mark]

c)

What can be concluded from **Figure 12** about the pressure in a liquid?

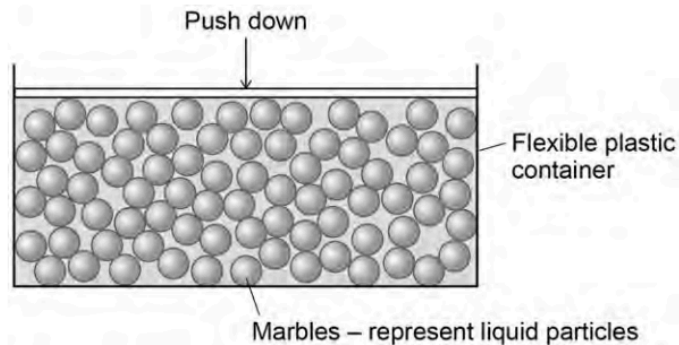
[1 mark]

d)

Figure 13 shows a simple model of a liquid.

When a force pushes down on the marbles, the marbles push the sides and bottom of the container outwards.

Figure 13



What can be concluded from this model about the pressure in a liquid?

[1 mark]

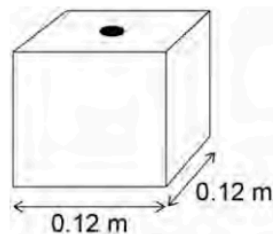
Q2.(2023)

a)

Figure 24 shows one of the cubes. The cube is filled with water.

The weight of the water exerts a pressure on the bottom of the cube.

Figure 24



Which equation correctly links area, force and pressure?

[1 mark]

Tick (✓) **one** box.

pressure = force $\times$ area²

☐

pressure = force $\times$ area

☐

pressure = $\frac{\text{force}}{\text{area}}$

☐

pressure = $\frac{\text{area}}{\text{force}}$

☐

b)

The water pressure at the bottom of the cube is 1500 Pa.

Calculate the force of the water on the bottom of the cube.

[4 marks]

Force = _____ N