

**GCSE Physics A (Gateway)**

**J249/03 Physics A P1-P4 and P9 (Higher Tier)**

**Question Set 18**

- 18 (a) A depth of 10 m of water exerts the same amount of pressure as the entire Earth's atmosphere, which is ~120 km deep.

Suggest why.

Water is denser than air.

[1]

- (b) A diver takes pressure readings at different depths.

The results are in the table.

Depth of water (m)	Pressure (standard units)
0	1
10	2
20	3
30	4
40	5
50	6

Use the results to describe the relationship between the depth of water and pressure.

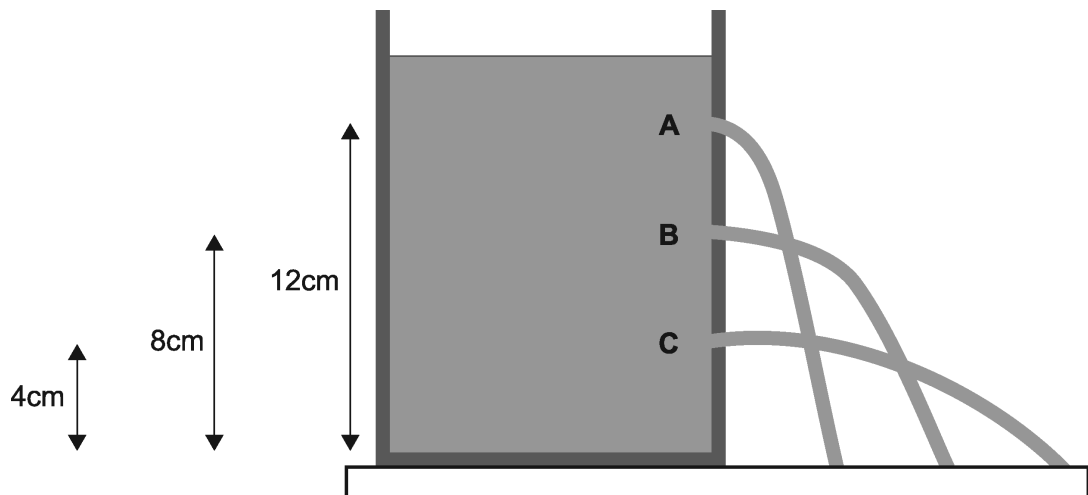
as depth of water increases, pressure increases. An increase of 10m depth results in [2]

- (c) Suggest why there is pressure at 0 metres. 1 standard unit in pressure.

Pressure exerted by the Earth's atmosphere

[1]

(d) A container of vegetable oil has 3 holes in it (A, B and C).



The vegetable oil has a density of  $9.1 \times 10^2 \text{ kg/m}^3$ .

Calculate the change in pressure from A to B.

Show your working.

Give your answer to **two** significant figures.

$$0.12 \text{ m to } 0.08 \text{ m}$$

$$\text{Pressure} = \rho g h$$

$$= (0.12 - 0.08) \times 9.1 \times 10^2 \times 10$$

$$= 0.04 \times (9.1 \times 10^2) \times 10$$

$$= 364 \approx 360 \text{ (2sf)}$$

Answer = ..... 360 ..... Pa

[4]

**Total Marks for Question Set 18: 8**

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