Pressure – 2022 June IGCSE 0625

1. June/2022/Paper_11/No.11

Liquid of mass 92 kg is contained in a rectangular tank.

The area of the base of the tank is 0.23 m^2.

What is the pressure exerted by the liquid on the base of the tank?

A $2.5 \times 10^{-4}\,N/m^2$

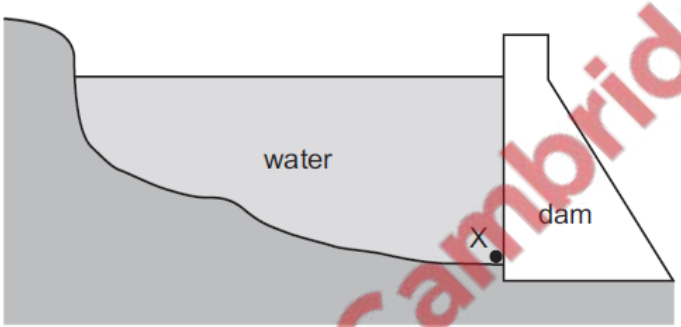
B $2.5 \times 10^{-3}\,N/m^2$

C $400\,N/m^2$

D $4000\,N/m^2$

2. June/2022/Paper_11/No.12

The diagram shows a deep reservoir formed by a dam.



On what does the pressure at X depend?

A the depth of the water at X

B the length of the reservoir

C the surface area of the water

D the thickness of the dam wall

3. June/2022/Paper_12/No.11

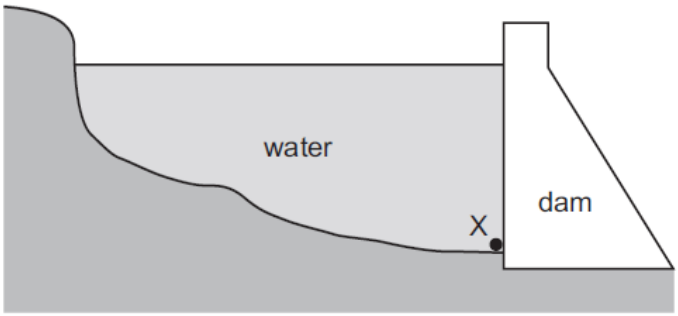
The table shows the weights and base areas of four metal blocks.

Which block exerts the greatest pressure on its base?

	weight / N	area of base / m^2
A	3000	0.20
B	10000	0.50
C	16000	2.0
D	20000	1.5

4. June/2022/Paper_12/No.12

The diagram shows a deep reservoir formed by a dam.



On what does the pressure at X depend?

A the depth of the water at X

B the length of the reservoir

C the surface area of the water

D the thickness of the dam wall

5. June/2022/Paper_13/No.11

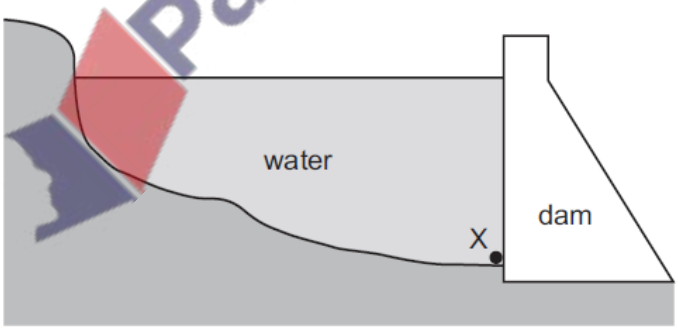
A force of 14 N is applied to the head of a nail. This causes a pressure of 25 N/mm^2 at the tip of the nail.

What is the cross-sectional area of the tip of the nail?

A 0.56 mm^2 **B** 11 mm^2 **C** 39 mm^2 **D** 350 mm^2

6. June/2022/Paper_13/No.12

The diagram shows a deep reservoir formed by a dam.



On what does the pressure at X depend?

A the depth of the water at X

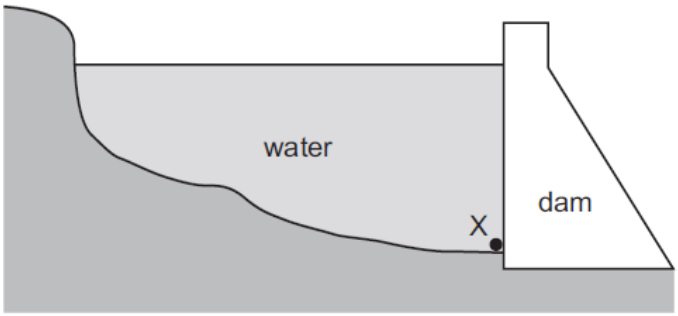
B the length of the reservoir

C the surface area of the water

D the thickness of the dam wall

7. June/2022/Paper_21/No.13

The diagram shows a deep reservoir formed by a dam.



On what does the pressure at X depend?

A the depth of the water at X

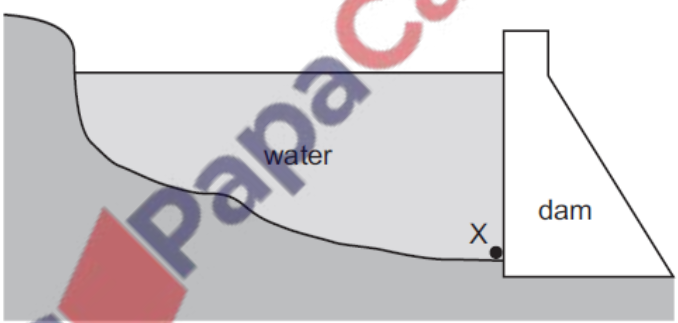
B the length of the reservoir

C the surface area of the water

D the thickness of the dam wall

8. June/2022/Paper_22/No.13

The diagram shows a deep reservoir formed by a dam.



On what does the pressure at X depend?

A the depth of the water at X

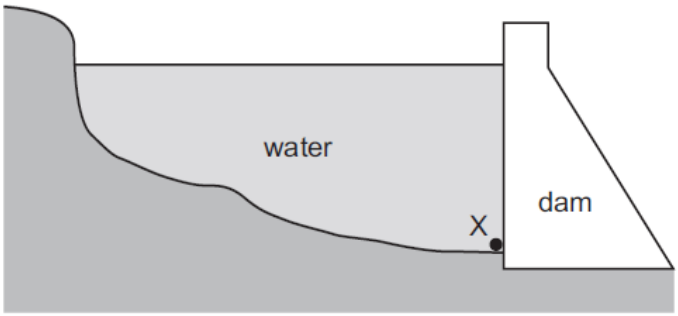
B the length of the reservoir

C the surface area of the water

D the thickness of the dam wall

9. June/2022/Paper_23/No.13

The diagram shows a deep reservoir formed by a dam.



On what does the pressure at X depend?

A the depth of the water at X

B the length of the reservoir

C the surface area of the water

D the thickness of the dam wall

10. June/2022/Paper_31/No.3

(a) Fig. 3.1 shows a metal block and its dimensions.

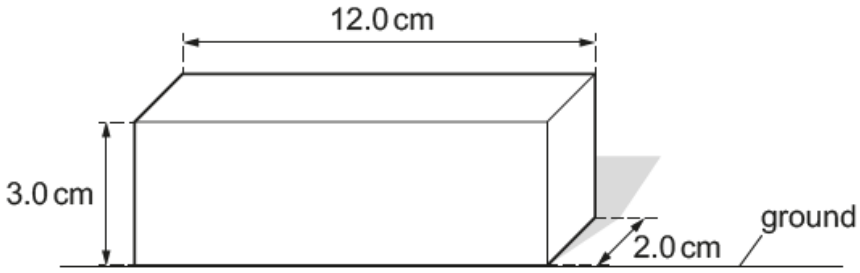


Fig. 3.1 (not to scale)

(i) Calculate the area of the metal block in contact with the ground.

area = ... cm^2 [2]

(ii) The mass of the metal block is 0.84 kg.

Calculate the weight of the metal block.

weight = ... N [2]

(b) A different metal block has a weight of 24 N. The area of this metal block in contact with the ground is 4.0 cm^2.

Calculate the pressure of this block on the ground.

pressure = ... N/cm^2 [3]

[Total: 7]

11. June/2022/Paper_33/No.3

Fig. 3.1 shows a vehicle that is designed to travel on snow.

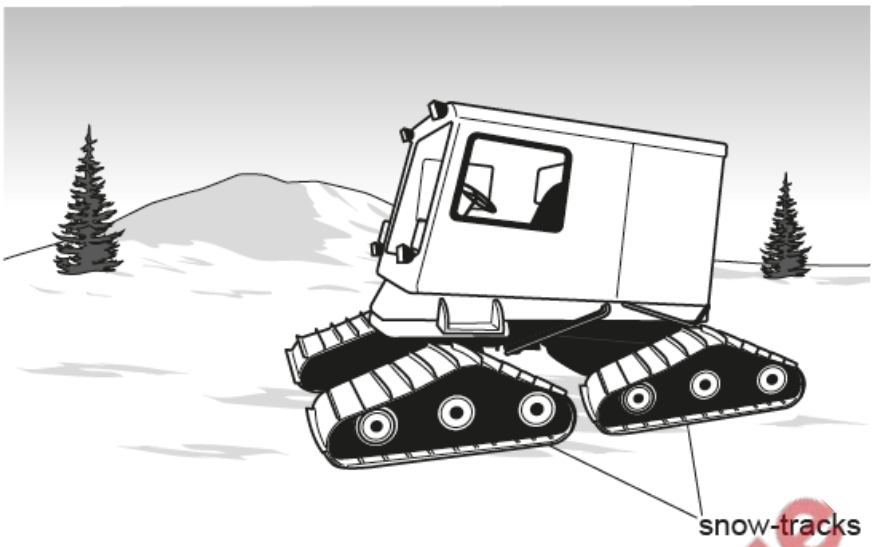


Fig. 3.1

The vehicle has four snow-tracks.

(a) Explain why the snow-tracks are better than wheels for travelling on snow.

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..... [2]

(b) The weight of the vehicle is 4000 N.

(i) Calculate the mass of the vehicle.

mass = ... kg [3]

(ii) The area of each snow-track in contact with the ground is $2.0\,m^2$. Each snow-track supports a quarter of the weight of the vehicle.

Calculate the pressure that each snow-track exerts on the ground. Include the unit in your answer.

pressure exerted by each snow-track = ... unit ..... [4]

[Total: 9]

12. June/2022/Paper_41/No.2(b, c)

(b) The turbine is 150 m below the level of the water in the reservoir.

Atmospheric pressure is 1.0×10^5 Pa. The density of water is $1000\,kg/m^3$.

(i) Calculate the total pressure in the water at the turbine.

pressure = ... [3]

(ii) The turbine has a cross-sectional area of $3.5\,m^2$.

Calculate the force exerted on the turbine by the water.

force = ... [2]

(c) The water flows to the turbine through a pipe of constant cross-sectional area.

Explain why the kinetic energy of the water in the pipe remains constant as it flows through the pipe.

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..... [2]