O Level · Cambridge (CIE) · Physics

18 mins | 18 questions

Multiple Choice Questions

1.8 Pressure

Pressure & Forces / Pressure in a Liquid

Easy (5 questions)	/5
Medium (8 questions)	/8
Hard (5 questions)	/5
Total Marks	**/18**

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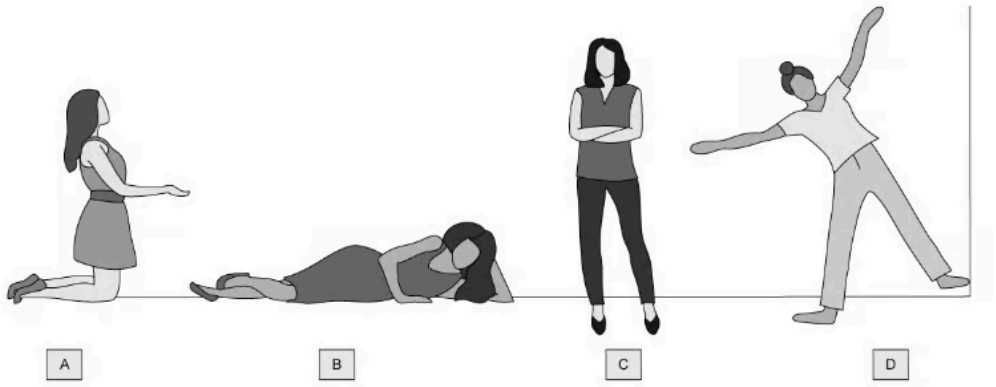
Easy Questions

1 A woman is in contact with the floor.



In which of these poses does she produce the most pressure on the floor?

A. A

B. B

C. C

D. D

(1 mark)

2 Which is an example of a force acting over a small area to produce a large pressure?

A. A skier wearing large skis on snow.

B. A hammer being used to push a nail into a piece of wood.

C. A tractor having very wide tyres.

D. A person lying down, rather than walking upright on a roof.

(1 mark)

3 A water-filled tank is resting on a table as shown in Fig. 1

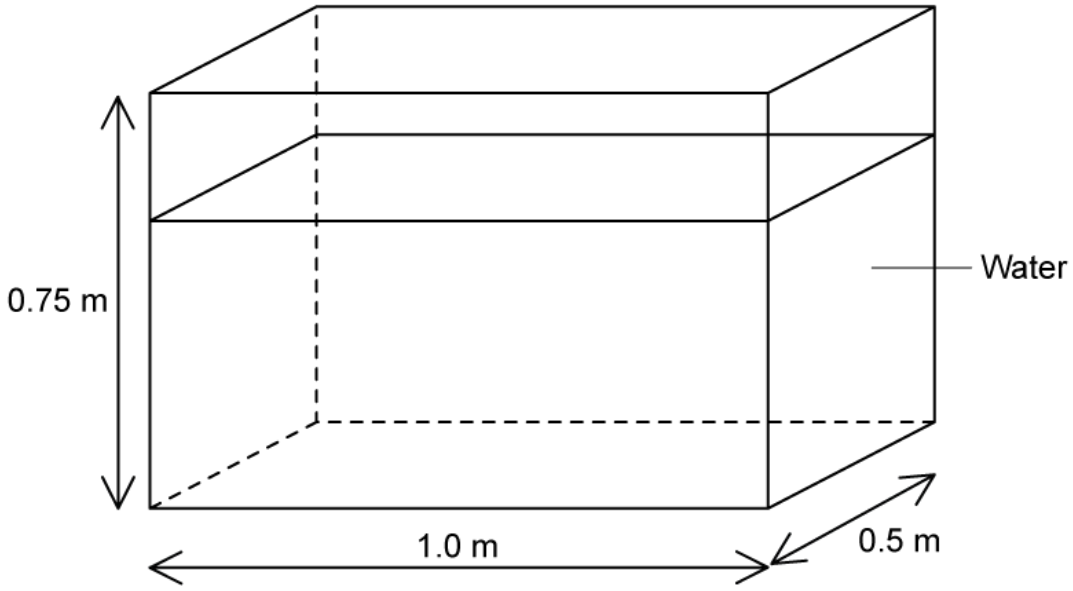


Fig. 1

Using the measurements in the diagram, determine the area which should be used to calculate the pressure the tank exerts on the table.

A. 0.25 m^2

B. 0.5 m^2

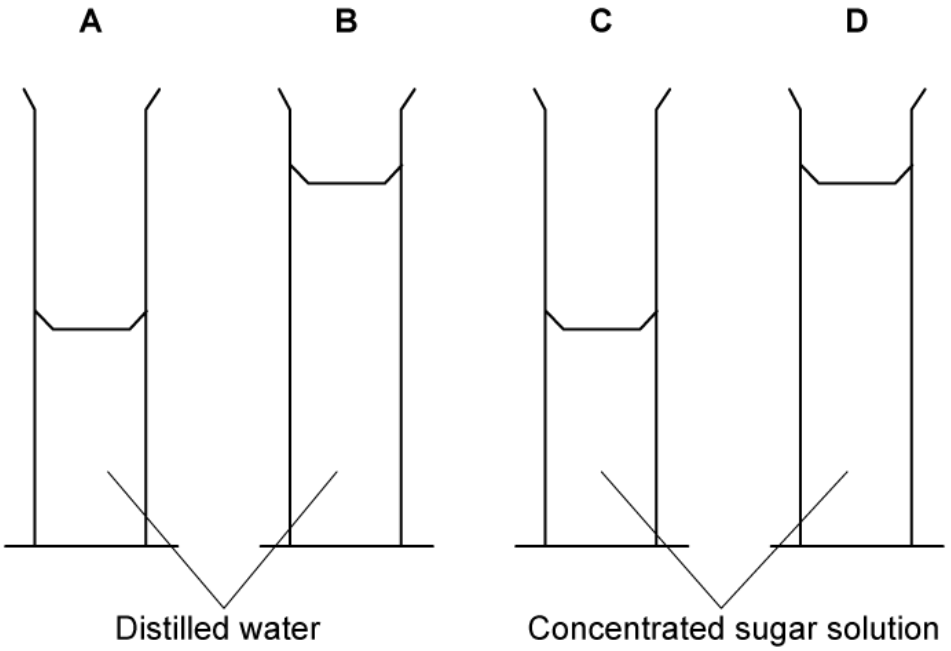
C. 0.75 m^2

D. 1.0 m^2

(1 mark)

4 The diagram shows four measuring identical cylinders containing either distilled water or concentrated sugar solution.

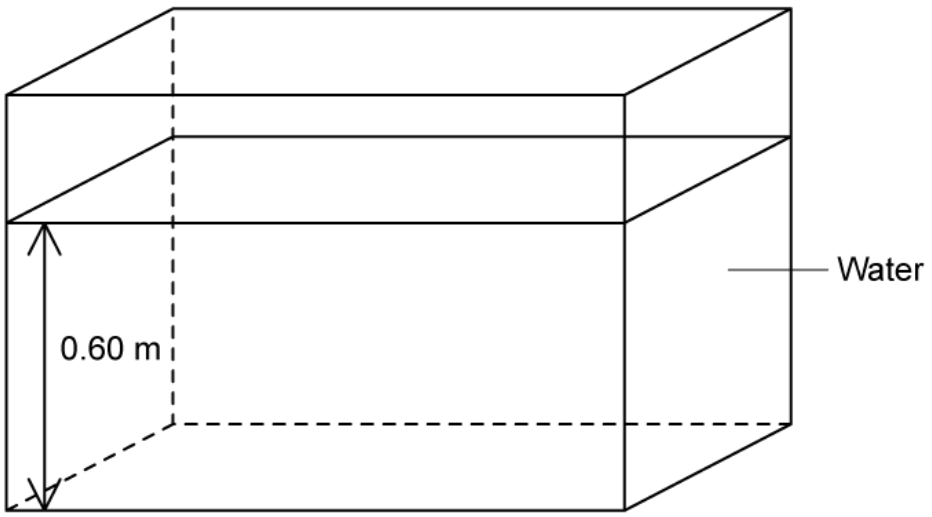
Which measuring cylinder has the least pressure at the base, due to the liquid?



(1 mark)

5 For the tank of water in the diagram below, which value gives the pressure on the base of the tank due to the water?

The density of water = 1000 kg/m^3



A. 5000 Pa

B. 5500 Pa

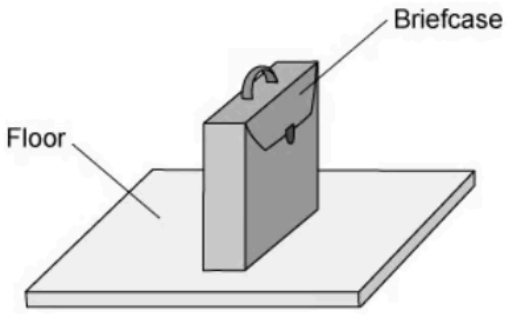
C. 6000 Pa

D. 6500 Pa

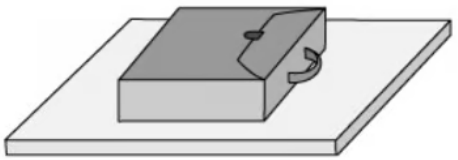
(1 mark)

Medium Questions

1 A briefcase, with flat, rectangular sides rests on the floor as shown in the diagram.



The briefcase is now turned so that it rests with its large, flat side on the floor.



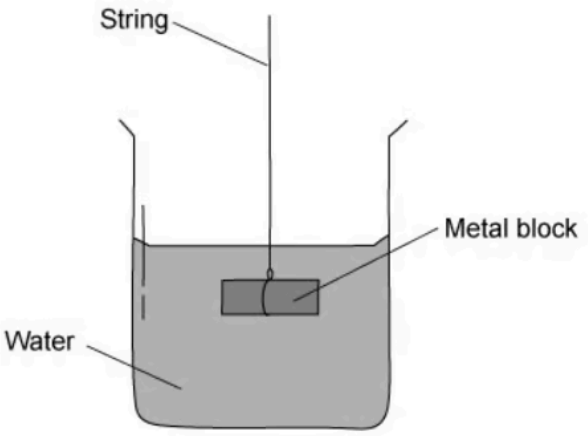
How has the change affected the force on the floor, and the pressure exerted by the briefcase on the floor?

	Force	**Pressure**
A	unchanged	decreased
B	unchanged	unchanged
C	decreased	decreased
D	decreased	unchanged

(1 mark)

2 A small metal block is suspended under the surface of a beaker of water by a string.

The metal block experiences a pressure exerted by the liquid.



What would increase the pressure exerted on the metal block?

A. increasing the surface area of the stone

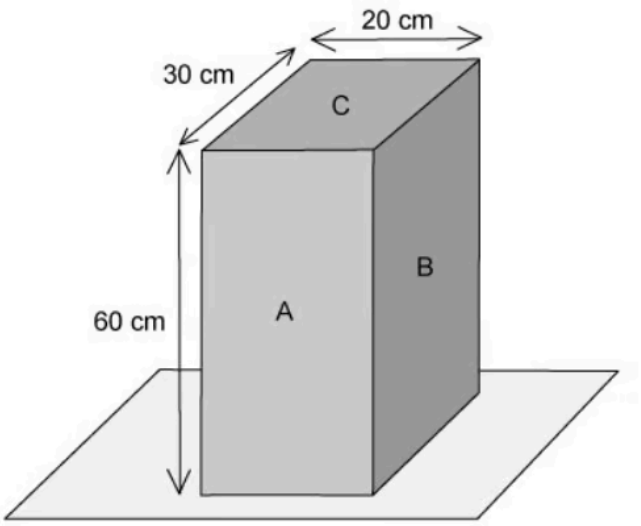
B. using a liquid with a lower density

C. increasing the mass of the metal block

D. lowering the metal block deeper into the liquid

(1 mark)

3 A wooden block rests on a table.



On which surface should the block be laid to produce the largest pressure on the table?

A. A

B. B

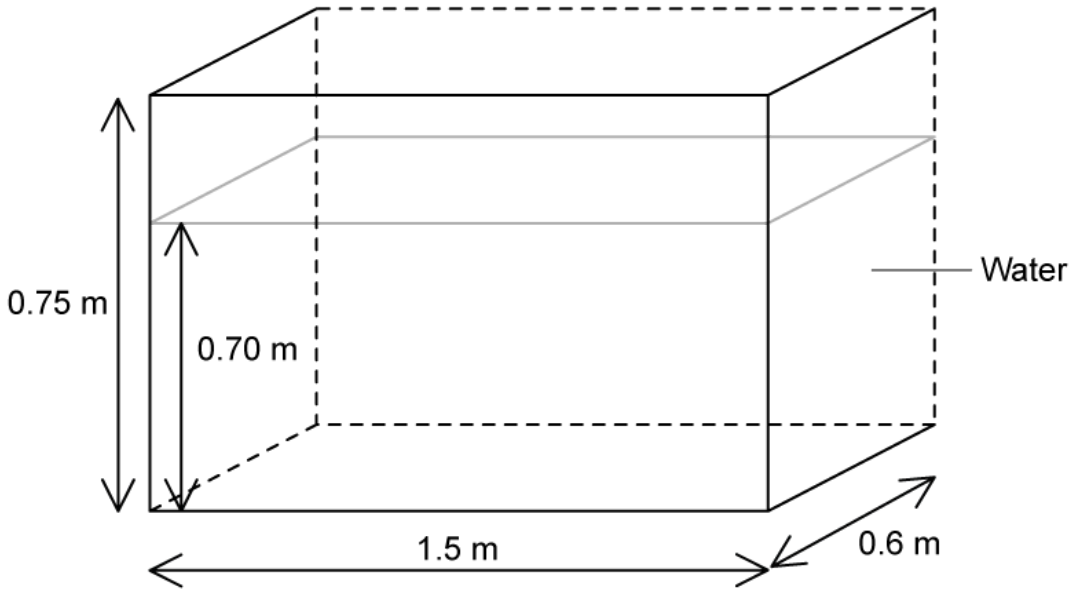
C. C

D. Any side, they will all produce the same pressure

(1 mark)

4 For the tank of water in the diagram below, which value gives the pressure on the base of the tank due to the water?

The density of water = 1000 kg/m^3



A. 6500 Pa

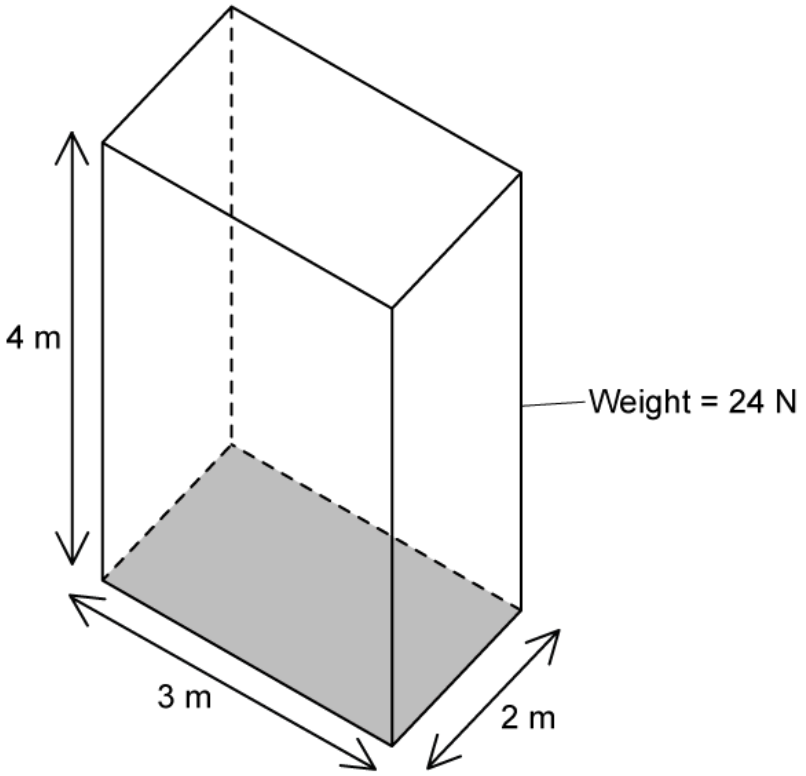
B. 6900 Pa

C. 7400 Pa

D. 7900 Pa

(1 mark)

5 What pressure does the object in the diagram below exert on the ground beneath it?



A. 4.0 Pa

B. 6.0 Pa

C. 12 Pa

D. 24 Pa

(1 mark)

6 Which expression for pressure is correct?

A. force × area

B. force ÷ area

C. mass × area

D. mass ÷ area

(1 mark)

7 At a depth *d* in sea-water, the total pressure experienced by a diver is *2P*, where *P* is atmospheric pressure.

At which depth is the pressure *4P*?

A. 1.5*d*

B. 2*d*

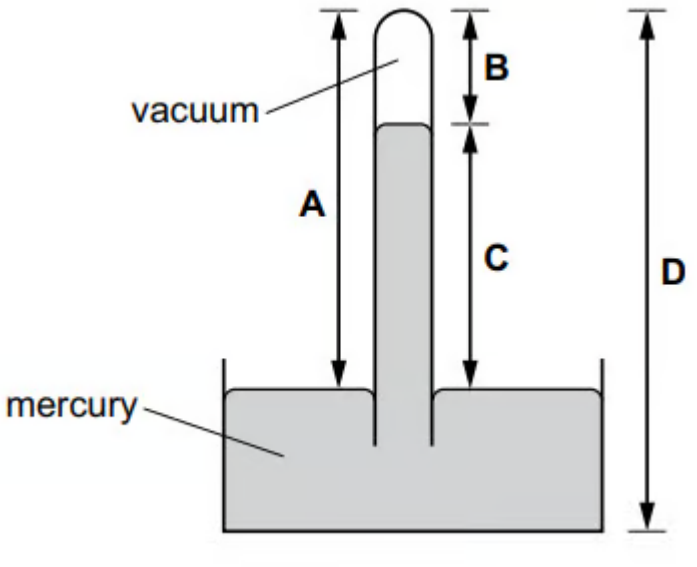
C. 3*d*

D. 4*d*

(1 mark)

8 Mercury is a liquid. The diagram shows a simple mercury barometer.

Which height is a measure of the atmospheric pressure?



(1 mark)

Hard Questions

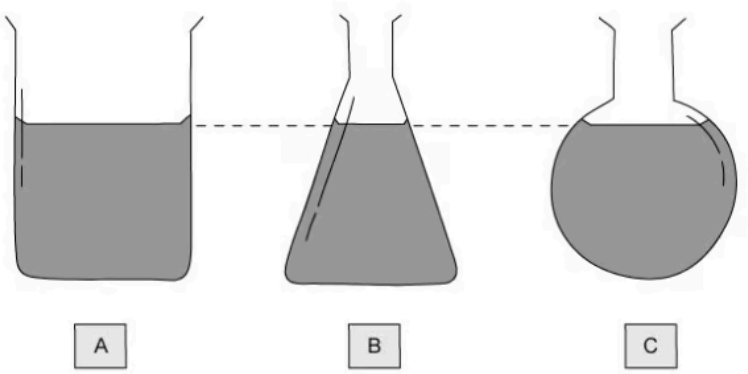
1 The table gives four combinations of the force applied to a surface and the area over which it acts.

Which row gives the smallest pressure exerted on the surface?

	Force / N	**Area / m^2**
A	40	0.5
B	40	2.0
C	80	0.5
D	80	2.0

(1 mark)

2 Three beakers of water are placed on a table. The depth of water in each container is the same.



In which container does the water exert the greatest pressure on the base of the container?

A. A

B. B

C. C

D. None, the pressure is the same in all three.

(1 mark)

3 A person walking through snow sinks into it.

The person makes a change so that they do not sink as far next time they go out.

What do they do?

A. Crouch as they walk to lower their centre of mass

B. Run as fast as they can to increase the power they dissipate

C. Wear shoes with a much larger area on the bottom to increase the area of their feet in contact with the snow

D. Wear a heavy backpack to increase their weight and so make them more stable .

(1 mark)

4 There is a significant risk to submarines which dive to very great depths.

Why is it dangerous to do this?

A. The temperature of water is too low at greater depths.

B. The density of water is less at greater depths

C. The pressure is too great at greater depths.

D. The gravitational pull increases at greater depths

(1 mark)

5 The ornament in Fig. 1 is designed to balance in either of the positions shown.

Calculate the difference in the pressure on the ground when the ornament's position is changed.

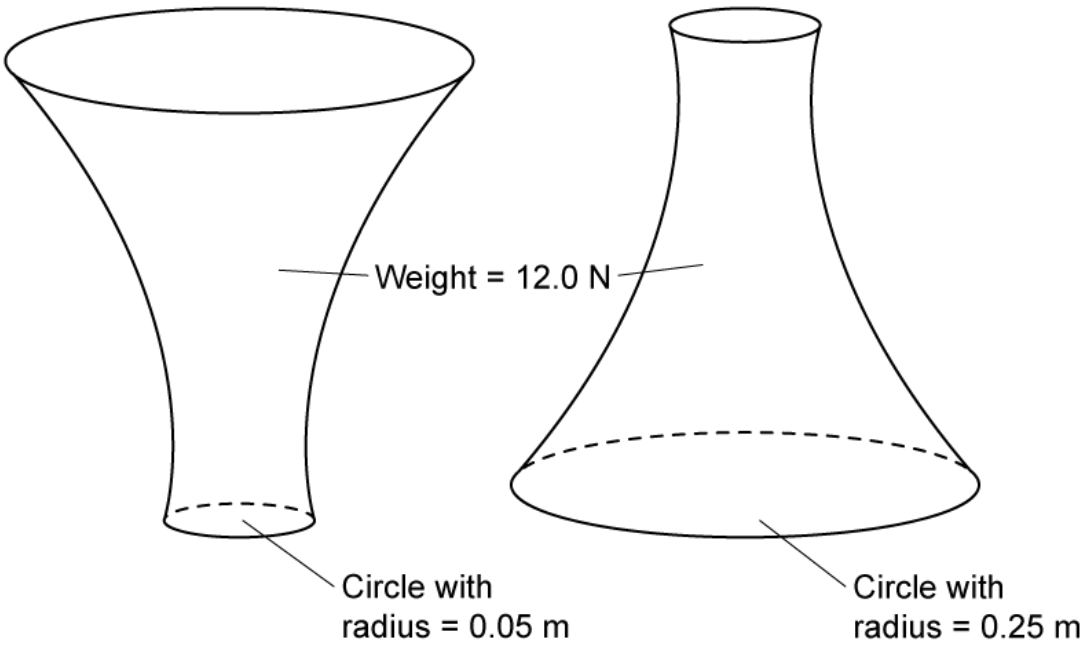


Fig. 1

A. 1000 Pa

B. 1250 Pa

C. 1500 Pa

D. 2000 Pa

(1 mark)