

10 The photograph shows a cylinder of compressed air used to breathe underwater.



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(a) Explain how the air causes a pressure on the inside of the cylinder.

Refer to particles in your answer.

(3)

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(b) Explain what happens to the pressure of the air inside the cylinder as its temperature increases.

(3)

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- (c) A fixed mass of air has a volume of $43\,000\text{ cm}^3$ when its pressure is 100 kPa .

Calculate the pressure of this fixed mass of air when it is inside the cylinder.

[volume of air in cylinder = 8500 cm^3]

(3)

pressure = kPa

(Total for Question 10 = 9 marks)

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11 A light ray can undergo total internal reflection.

(a) (i) State two uses of total internal reflection.

(2)

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(ii) Describe the conditions required for total internal reflection to occur.

(2)

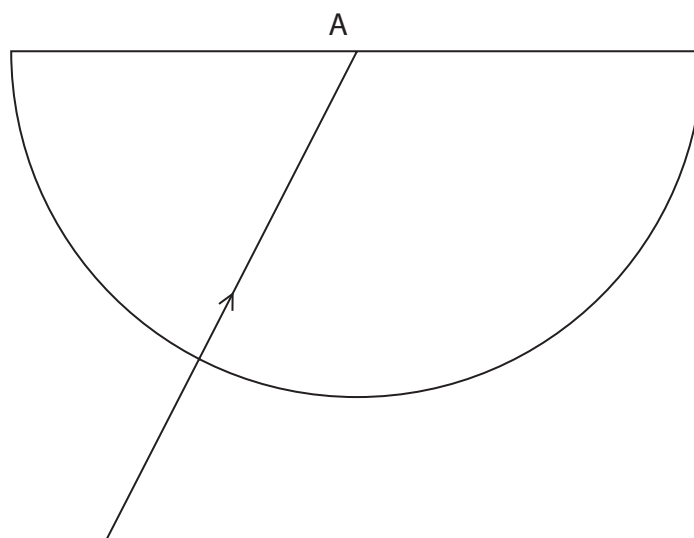
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(b) The diagram shows a light ray entering a glass block from air and then incident on the flat side of the block at position A.



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