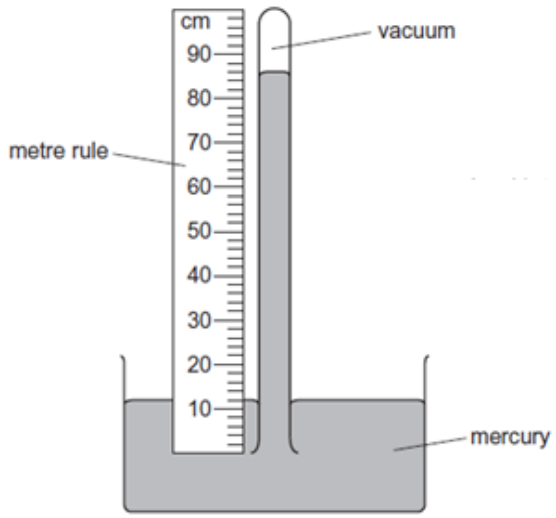
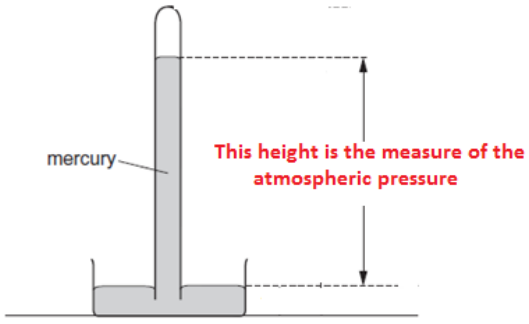
Mercury barometer:

- Atmospheric pressure at sea level is 100kPa.
- Mercury barometer is designed to measure atmospheric pressure.

Construction and working of the mercury barometer:

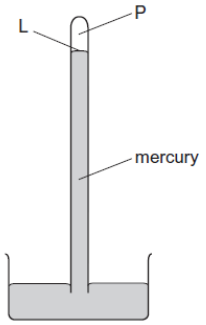


- It consists of an inverted glass tube containing mercury with its lower end under the surface of mercury in a container open to the atmosphere.
- The space above the tube is a vacuum.
- The atmospheric pressure balances the pressure due to the column of mercury in the tube
- Atmospheric pressure =height of mercury column in the barometer.
- A rise in the atmospheric pressure causes the mercury to rise in the tube.
- A decrease in the atmospheric pressure causes the level of mercury to drop in the tube.
- Atmospheric pressure at sea level=101kPal=760mmHg.
- A variation in the atmospheric pressure can cause the height of the column to vary by 10-20mm
- Atmospheric pressure can be calculated by using the formula: p= $h\rho g$.

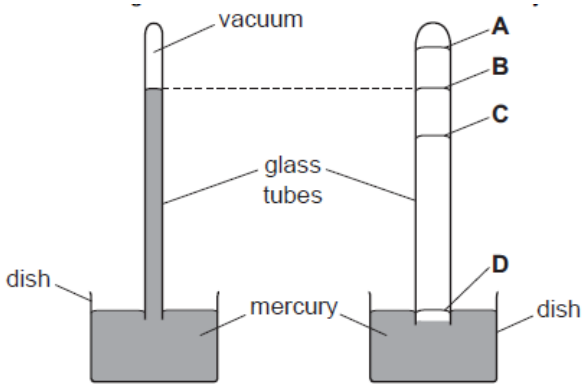


When the atmospheric pressure rises then the level of mercury at L rises and the pressure in the region P stays the same as there is only vacuum or some mercury vapour in this region P.

Also note that since there is vacuum above L , so the pressure at L is almost zero



Imagine two mercury barometers standing side by side, then it does not matter what the diameter of the capillary tubes of the two barometers is, the mercury will stand at the same height as the height is the measure of the atmospheric pressure.



Application based questions:

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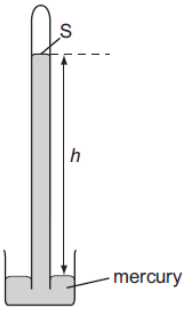
12 The diagram shows a simple mercury barometer. The barometer reading is *h* cm of mercury.



0625/01/M/J/04

What is the pressure at S?

A approximately zero

B atmospheric pressure

C atmospheric pressure + *h* cm of mercury

D *h* cm of mercury

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12 What is a simple mercury barometer designed to measure? 0625/11/O/N/10

A the pressure beneath a liquid

B the pressure of a gas supply

C the pressure of car tyres

D the pressure of the atmosphere

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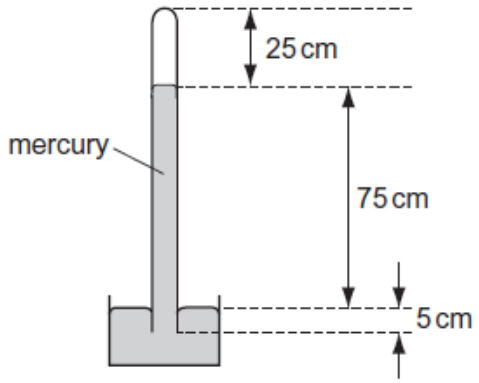
12 The diagram shows a mercury barometer. O/N/12-P13-Q12



Which distance is used to calculate the pressure of the atmosphere?

A 25 cm **B** 75 cm **C** 80 cm **D** 100 cm

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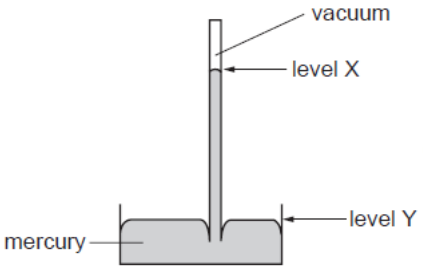
12 The diagram shows a simple mercury barometer. 0625/1/O/N/02



If atmospheric pressure increases, what happens to level X and to level Y?

	level X	level Y
A	goes down	goes down
B	goes down	goes up
C	goes up	goes down
D	goes up	goes up
