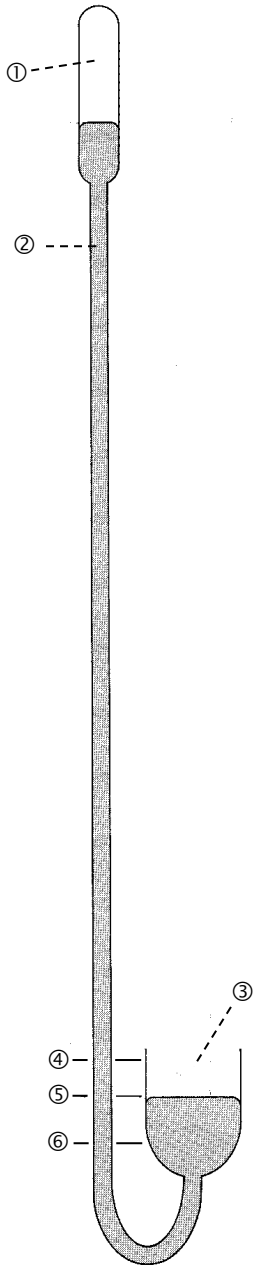
Mercury barometer

Here's a mercury barometer for measuring absolute air pressure: It consists of a U-shaped tube which is closed at the top on the left side and open on the right side.

Tasks



a) What do we have at ①, ② and ③ (see picture)?

① .....

② .....

③ .....

b) Would the height of the liquid column change on the left side if the left (closed) side of the tube would be made longer? If yes, how? Give reasons for your answer.

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c) Why is the liquid column on the left side higher than on the right side?

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d) Where (at ④, ⑤ or ⑥) is the pressure equal on both sides of the U-shaped tube?

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e) Where (at ④, ⑤ or ⑥) is the fluid pressure on the left side equal to the air pressure on the right side?

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f) In which direction does the liquid column on the left and on the right side move, if air pressure increases?

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g) In which direction does the liquid column on the left and on the right side move, if air pressure decreases?

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h) What would happen if air pressure went down to zero?

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i) Where do you read the height of the mercury column if you want to determine air pressure?

- ☐ distance between the upper surface of mercury and the lowest point of the tube
- ☐ distance between the upper surface of mercury and the lower surface of mercury
- ☐ distance between the highest point of the tube and the lowest point of the tube
- ☐ distance between the highest point of the tube and the lower surface of mercury