

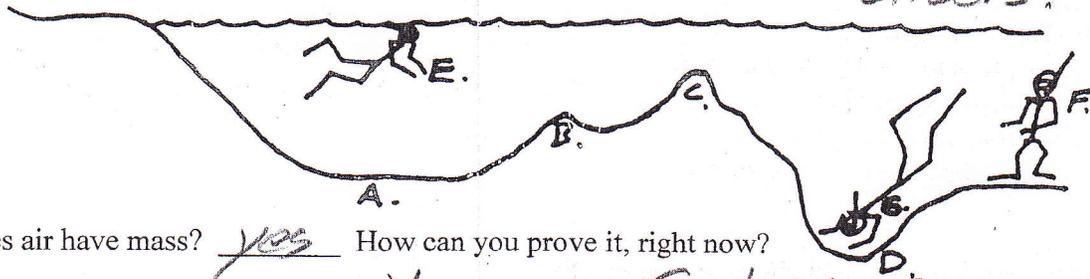
Physics
Atmospheric Pressure

Name: Answers

Look at the pictures of divers, below.

1. Which **diver** feels the most pressure? G Which feels the least? E
2. Which location on the seafloor has the most water above it? (location A, B, C, or D)
3. Which location on the seafloor will have the greatest water pressure pushing against it? D
4. Which diver has the most water sitting on top of her/him? G
5. Which diver has the least? E
6. Why does pressure on a diver increase when the diver goes deeper?

More water is sitting on top of deeper divers.



7. Does air have mass? yes How can you prove it, right now?

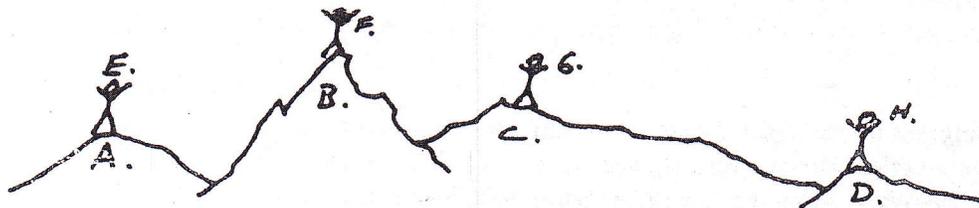
You can feel it if you wave your arms or blow.

8. Does air have weight? In other words, does a car tire weigh or a balloon weigh more when it's inflated? How can we test this in class?

Yes. We can see how much heavier a bottle gets when we pressurize it.

Look at the pictures of hikers, below.

9. Which mountain has the most air sitting on top of it? (A, B, C, or D)
10. Which mountain will have the most air pressure pushing down on it? D
11. Which hiker has the most air above him/her? H
12. Which hiker will feel the most air pressure? H The least? F

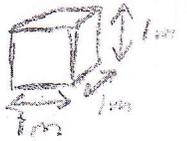


13. Which creates more pressure, air or water? water Why?

Water is heavier, so it pushes down with more force.

14.

At sea level, a cube of air 1m X 1m X 1m, has a mass of about 2.5 pounds



15.

At sea level, the pressure from all of the weight sitting on top of you is about 14.7 psi. That means, if your body has a surface area of about 2800 in², the total force of all of the air molecules pushing against your body is about 50,000 lbs. It doesn't squish you for two reasons:

- a) *I t's pushing against you from all directions (not just from above)*
- b) *There's equal pressure inside of us, pushing out, balancing the pressure pushing in.*

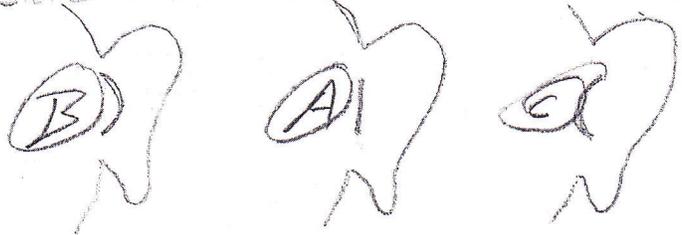
16.

The three pictures on the right show a person's eardrum in three different situations. Match each situation to the correct picture.

Draw arrows to represent pressure inside and outside of the head.

Situations:

- a) Normal air pressure
- b) Air pressure change due to rising rapidly in an airplane
- c) Air pressure change due to descending rapidly in an airplane

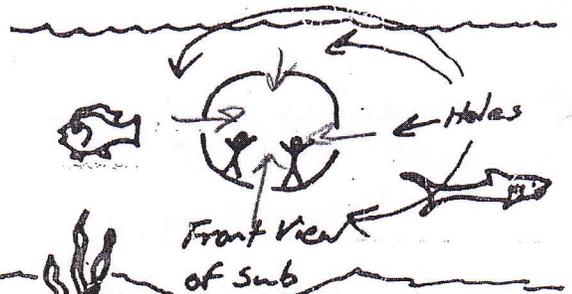


17.

The picture on the right shows the walls of a submarine. Someone has drilled four holes in the walls.

- a) Use arrows to show where water will push into the submarine.
- b) Where will the pressure of water rushing into the submarine be the strongest? Why? [Hint: think about the diver questions.]

Bottom. The deeper places have more pressure

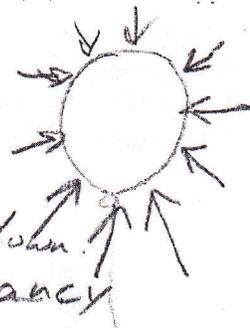


18.

- a) Use arrows to show air pressure pushing on the balloon from every direction. In areas where air pressure is stronger, make the arrows longer.

- b) Your diagram should show why bubbles and helium balloons float upward. Explain. *The pressure pushing up is stronger than the pressure pushing down.*

c) the force pushing them up is called buoyancy



19.

- a) The diagram on the right shows a bowling ball and a suction cup on a table. The suction cup has been stuck to the table. Draw arrows to show the directions from which air pressure is pushing on each object.

- b) Your diagram should show why it's hard to pull the suction cup off of the table. Explain.

There's pressure pushing down, but there's no air beneath it to create upward pressure.

