1. If liquids and gases are both fluids, how are they different from each other?
   D) A gas cannot be held in an open container they way that water can be kept in a cup with no lid. This is because the gas molecules are not bound to each other the way liquid molecules are.

2. The earth's atmosphere is composed of mainly (more than 50%)

3. The earth's atmosphere
   A) gets thinner and less dense as altitude increases.

4. When you put your finger over the top of your soda straw and pull it out of your coke,
   C) the soda stays in the straw as long as you keep the opening covered. This is because the weight of the liquid in the straw is balanced by the upward air pressure at the open bottom of the straw.

5. Say you were a secret agent on Mars, and were strolling along when you suddenly fell off a cliff and smashed the faceplate of your pressure suit on a Martian rock. The air pressure on Mars is only 0.1% of the air pressure on Earth.
   B) Uh-oh. Your face will explode like a really bad special effect in a Arnold Schwarzenegger movie, because your body's internal pressure is much greater than the external air pressure.

6. Atmospheric pressure is 14.7lb/in^2 at sea level. Why doesn't this make you uncomfortable?
   C) Your body's internal pressure matches the external air pressure. As long as the pressures are the same, you do not notice it. When your ears pop, this is your body regulating its pressure to match its environment.

7. You have signed up for diving lessons at the Acme Scuba Shop. Your instructor, who looks suspiciously like he has had inhaled one lungful too many of hemp-based aromatherapy incense, tells the class that the one thing a diver must never do is exhale while ascending from a dive.
   D) Get your money back, he's trying to kill you. Decreasing pressure will cause the air to expand and your lungs to overinflate, which could seriously injure or even kill you.

8. You buy a bag of chips at a San Francisco convenience store. You then drive to Mount Tamalpais for a picnic, where you pull the sealed packet out of your backpack.
   C) The packet has puffed up because the air pressure decreased when your altitude increased.

9. A mercury barometer works when air pressure pushes down on an open dish of mercury, forcing some of the liquid metal up into a glass tube.
   A) Higher pressure means the column of mercury gets longer.

10. A mercury barometer works when air pressure pushes down on a dish of mercury, forcing some of the liquid metal up into a glass tube. The higher the column of mercury, the greater the pressure of the surrounding air.
   B) If you replace the mercury with water, your tube must be longer.

11. According to Boyle's Law,
   C) decreasing the volume of a gas increases the pressure.

12. A closed cylinder of air has a volume of 2 liters. A piston decreases the volume to 1 liter.
   A) The pressure is now twice as much.

13. Compared to a calm, windless day, on a windy day the barometric pressure will be
   B) less.

14. Bernoulli's principle states that
   C) a moving fluid exerts less pressure than a stationary fluid.

15. One fine afternoon, Dumb decides to play a trick on Dumber. From the balcony overlooking the cafe, he drops his telescoping drinking straw 15 meters into Dumber’s coke while he is not looking. He sucks it dry and retracts the straw before Dumber turns around, astonished at his missing beverage.
   C) Only with CGI special effects; the straw is too long, and even a vacuum pump could not raise the liquid above 10.3 meters.
16. So how does a soda straw work?
   B) You reduce the pressure in the straw, causing the atmosphere to push liquid into the tube.

17. How does a vacuum cleaner work?
   C) It reduces the pressure in the hose. The greater external air pressure pushes the dirt into the vacuum.

18. You step outside on a windy day, and put up your umbrella to protect you from the rain. Suddenly, a gust of wind and the umbrella is turned inside out.
   B) The wind moving over the top of the umbrella exerted less pressure than the still air beneath. The still air pushed the umbrella up from below.

19. You place a ping-pong ball in a funnel and challenge your little brother to blow it out.
   C) The moving air beneath the ball reduce the pressure below it, so the air pushes down harder on the top of the ball, keeping it in place. The harder he blows, the more the ball is pushed into the funnel!