

4. An atmospheric pressure of 25.4 inches of mercury would be reported. Since 1.0 atm corresponds to the average sea-level value of atmospheric pressure, 0.85 atms means that the atmospheric pressure is lower than average.
5. The first came from the homosphere. In the homosphere, the mixture of gases in the air is the same throughout. It is the mixture we learned in the previous module. The heterosphere has many different compositions, depending on altitude.
6. The balloon enters the stratosphere when its temperature readings cease to decrease and begin increasing. The balloon enters the mesosphere when the temperature readings cease increasing and begin decreasing again. Since the temperature gradient changes at the stratosphere and then again at the mesosphere, this can be used to determine when the balloon has reached those parts of the atmosphere.
7. Troposphere, stratosphere, mesosphere
8. I am referring to the "amount gradient." You could also answer with "pressure gradient." Both the amount of air and the pressure decrease with increasing altitude. Remember, "gradient" just means steady change, so I can use that term with any quantity.
9. The plane is flying in the troposphere. That's where the majority of weather phenomena exist.
10. The second vial contains the gas with the highest temperature. Remember, temperature is a measure of the energy of random motion in a substance. Since the molecules in the second vial have a higher speed, they have more energy and thus a higher temperature.
11. Your companion is correct. Heat is energy that is being transferred. The reason you are cold is that energy is being transferred from your body to the surrounding air. Even though it sounds weird to say it, you get cold because of transferred energy; thus, you get cold because of heat!
12. The temperature gradient would reverse, getting warmer near that region. Remember, the temperature increases with increasing altitude in the stratosphere because of a layer of the greenhouse gas ozone. Carbon dioxide is also a greenhouse gas, and thus would produce roughly the same effect.
13. A ban on CFCs will probably not save or improve lives because CFCs cause a depletion of ozone only during a few months out of the year and mostly over Antarctica. Since there is no significant population there, and since the depletion is temporary, the "ozone hole" is not a big threat to human survival.
14. A ban on CFCs will most likely cost many lives because refrigeration, surgical sterilization, and firefighting will all be less efficient, causing death by starvation, death by eating food-borne illness, death by surgical infection, and death by fire.
15. Some kinds of human-made molecules that contain chlorine can survive the trip up to the ozone layer, while most naturally produced chlorine-containing molecules cannot. Thus, although we produce few chlorine-containing molecules, many of them can reach the ozone layer, where ozone depletion can occur. As a result, most of the ozone-destroying molecules in the ozone layer are from human sources.