

The Basic Properties of the Atmosphere

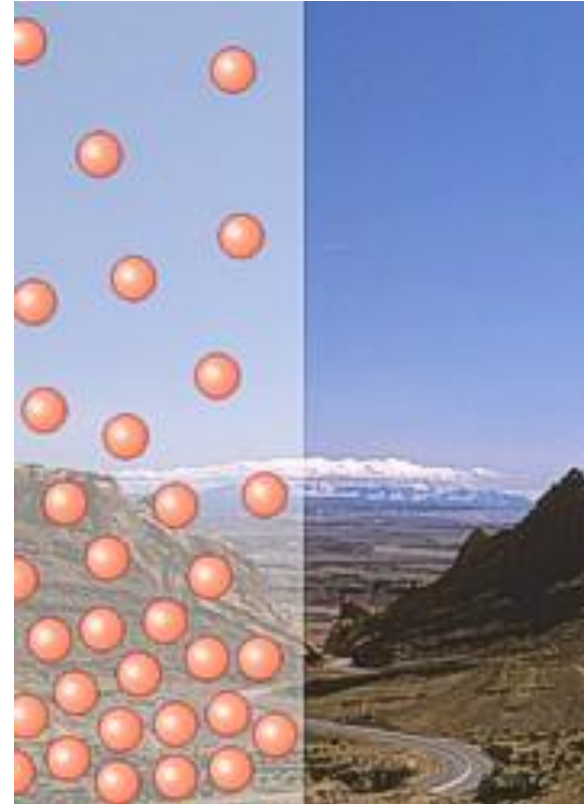
Pressure

Atmospheric pressure is the force exerted by air on a unit area. It can be thought of simply as the weight of the air above a given point.

Simply, the fewer molecules above you, the lower the pressure exerted on you and vice versa (more molecules above = higher pressure).

Since there are fewer molecules above you as you move up in the atmosphere, pressure always decreases with increasing altitude.

Click on the molecules in the atmosphere.



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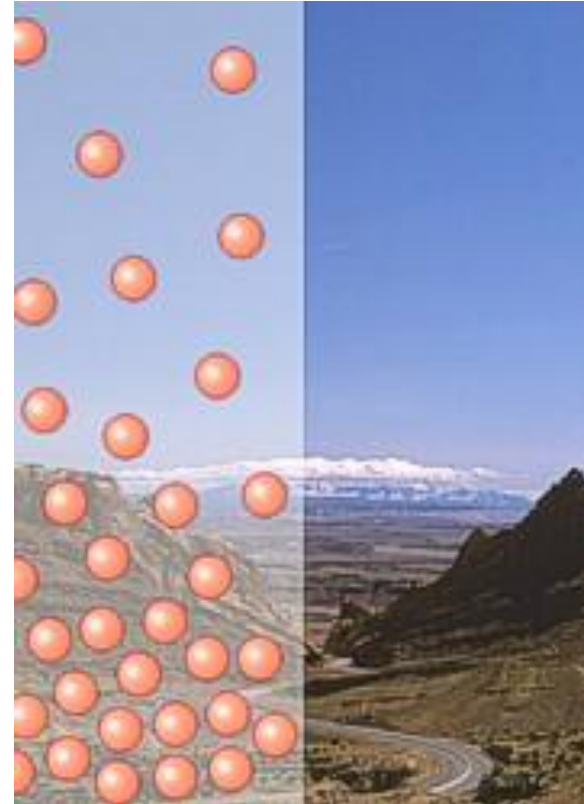
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Incorrect. Try Again!

Click on the molecules in the atmosphere.



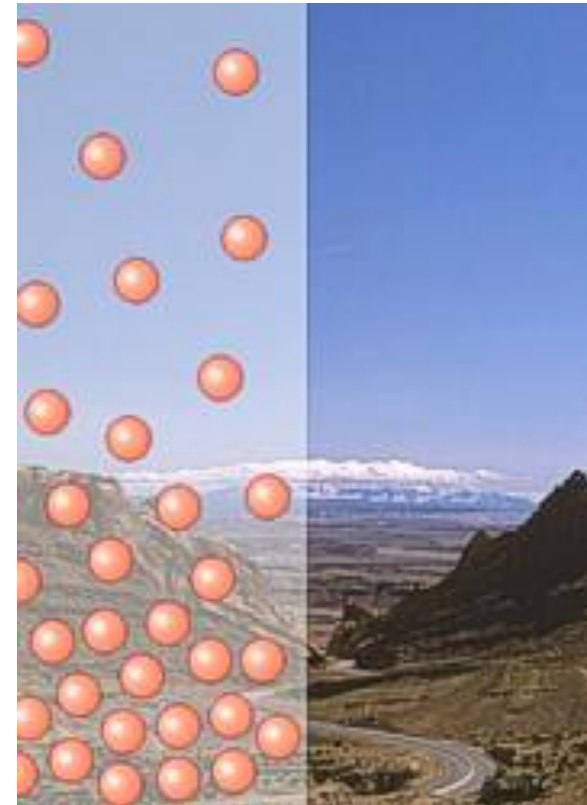
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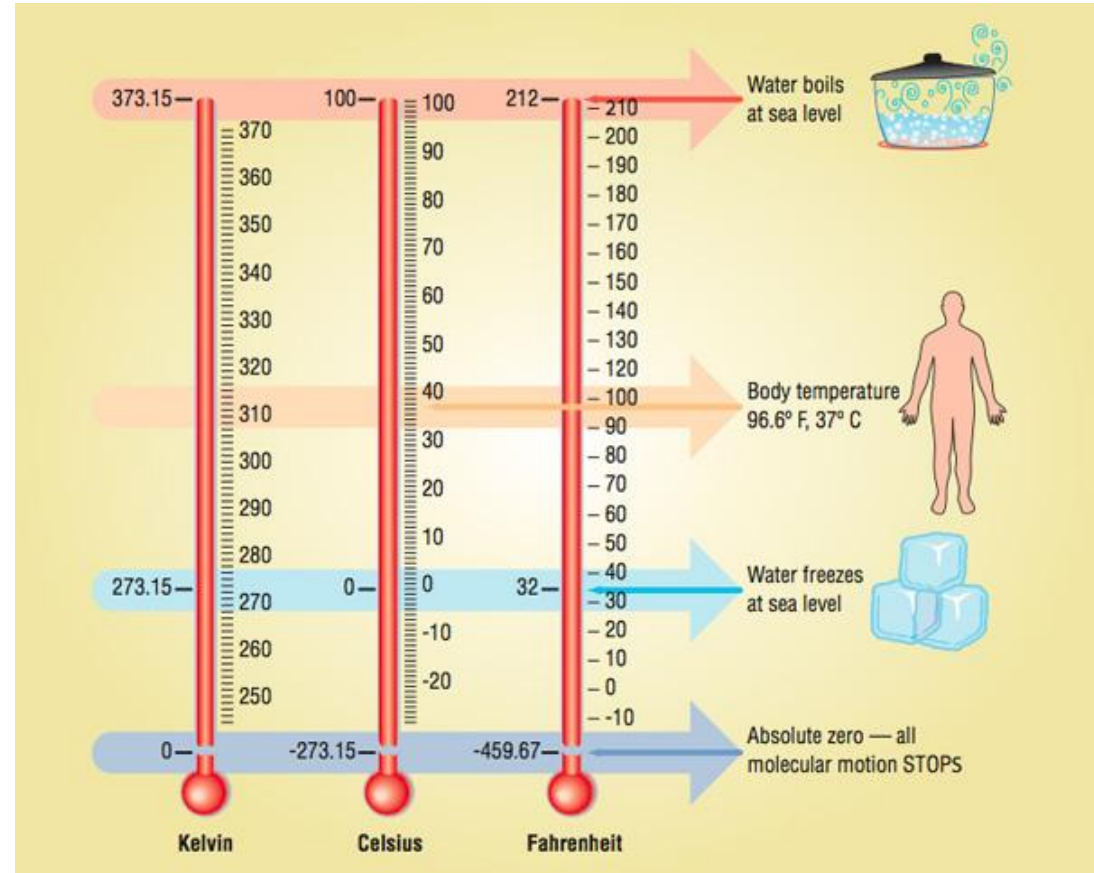
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Temperature

Temperature is a measure of the degree of hotness or coldness of an object. It is actually a measure of the average kinetic energy or speed of the molecules in a substance (air).

The more kinetic energy (speed) the molecules have, the higher their temperature and vice versa.

Air temperature is measured with a thermometer and is expressed using the Kelvin scale, Fahrenheit scale ($^{\circ}\text{F}$) or the Celsius scale ($^{\circ}\text{C}$).



Click on the Kelvin temperature scale.

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Temperature

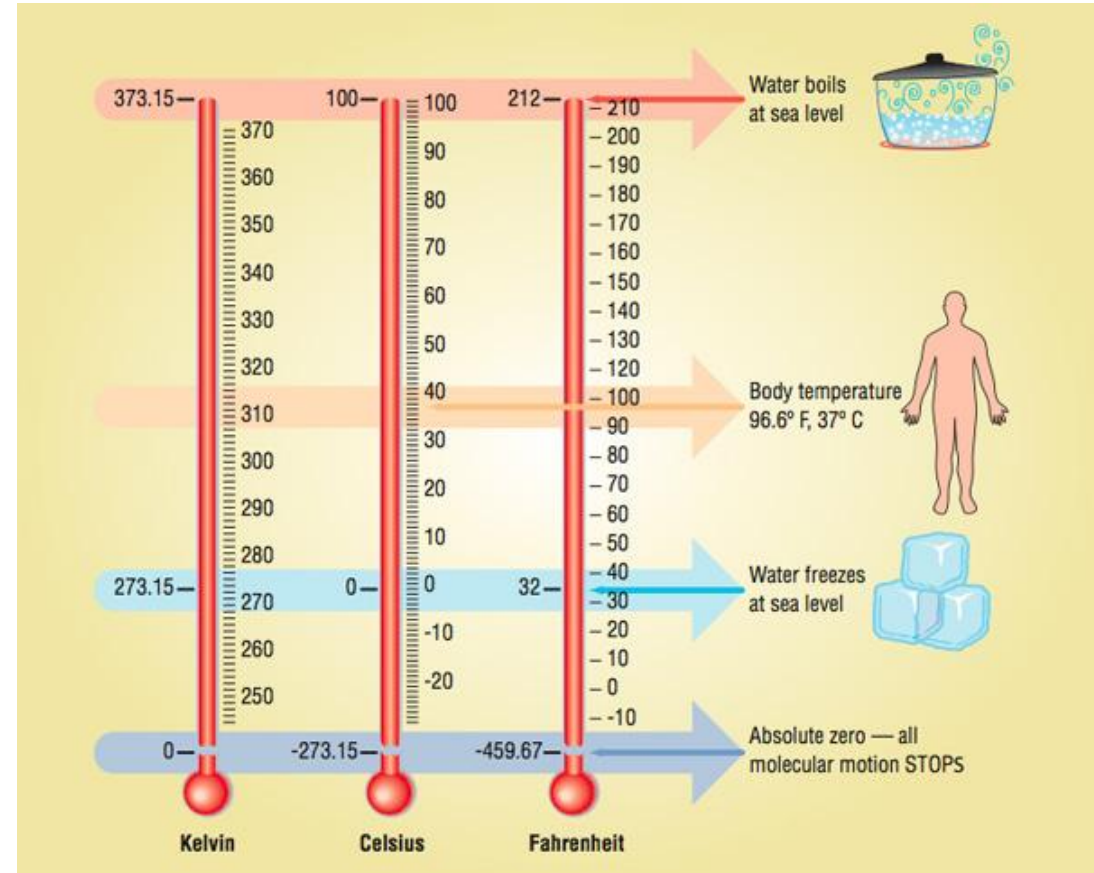
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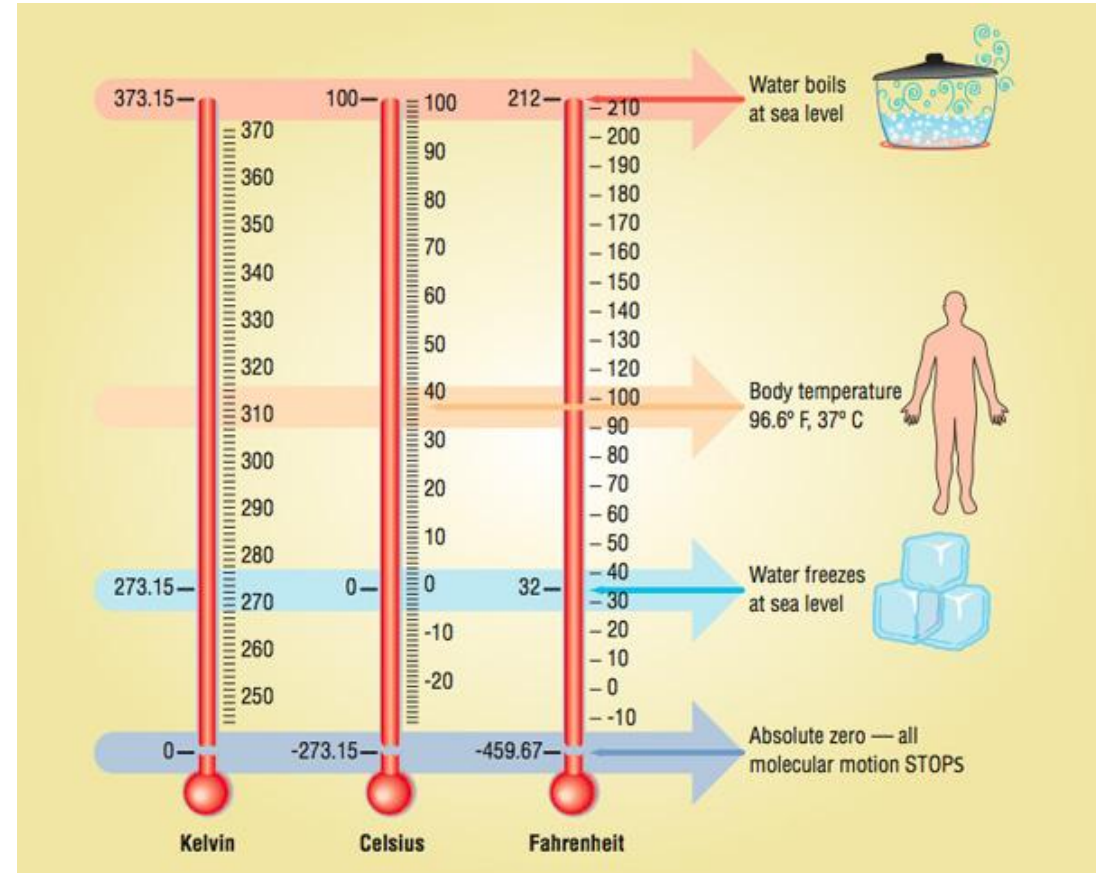
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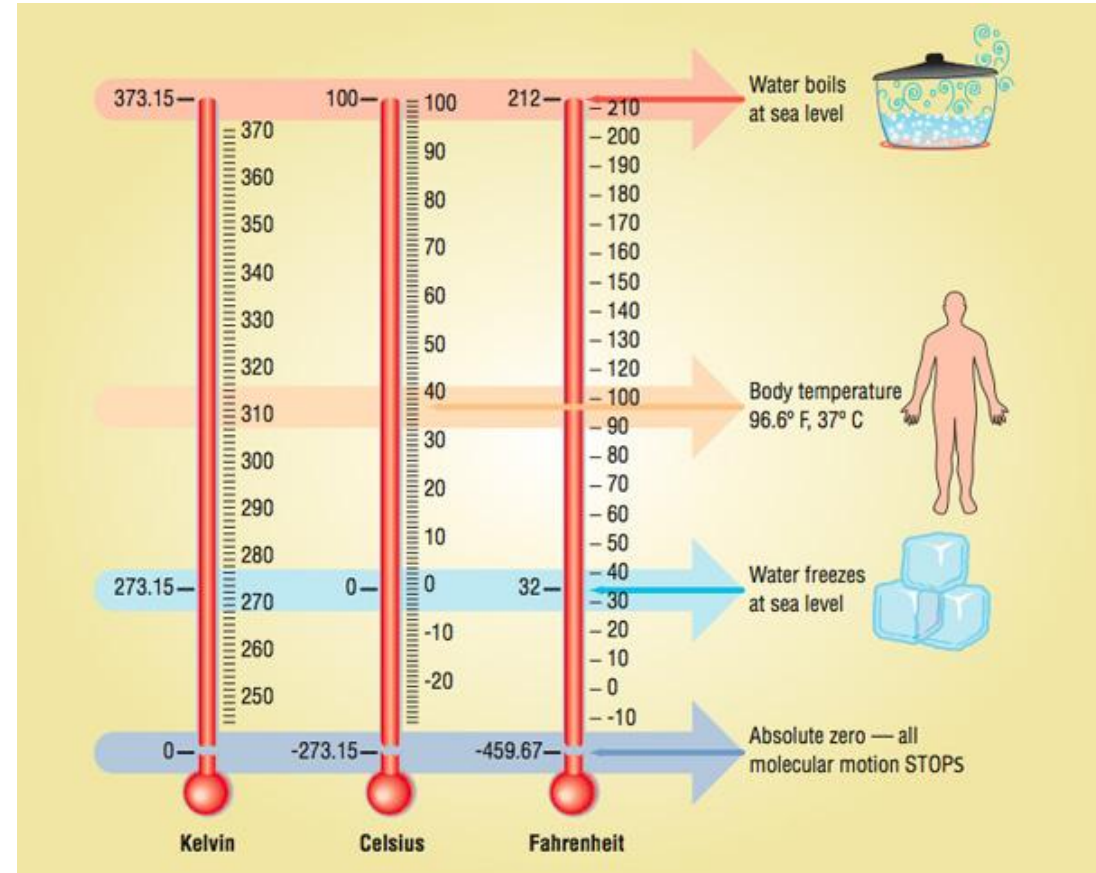
Temperature

The Kelvin scale is convenient for scientific calculations, but is not used to report the air temperature. In most of the world, air temperature is expressed in °C, but in the United States, only temperatures above the surface are expressed in °C.

Temperatures at the surface are usually expressed in °F. $^{\circ}\text{C} = 5/9(^{\circ}\text{F}-32)$. $\text{K} = ^{\circ}\text{C} + 273$.

Temperature is used to define the layers of the atmosphere.

Outside of the U.S. temperatures are expressed in degrees Centigrade.



TRUE? FALSE?

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Temperature

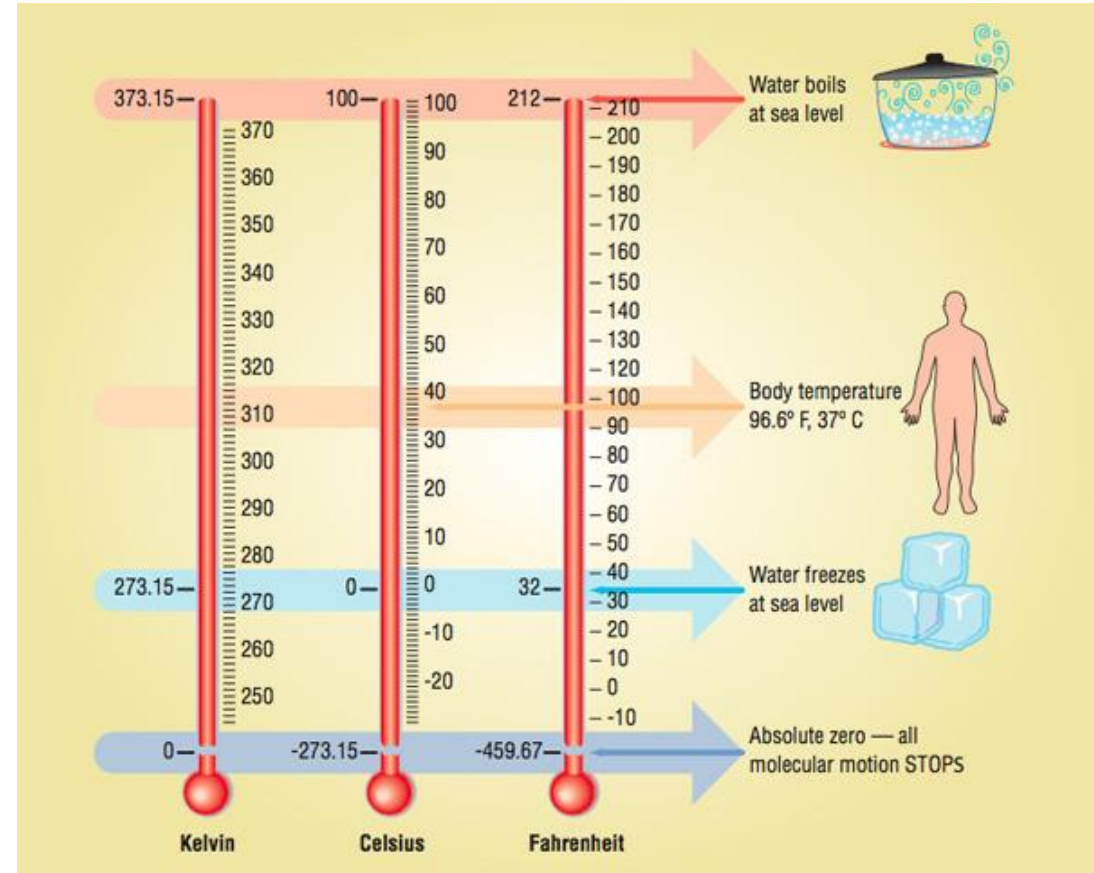
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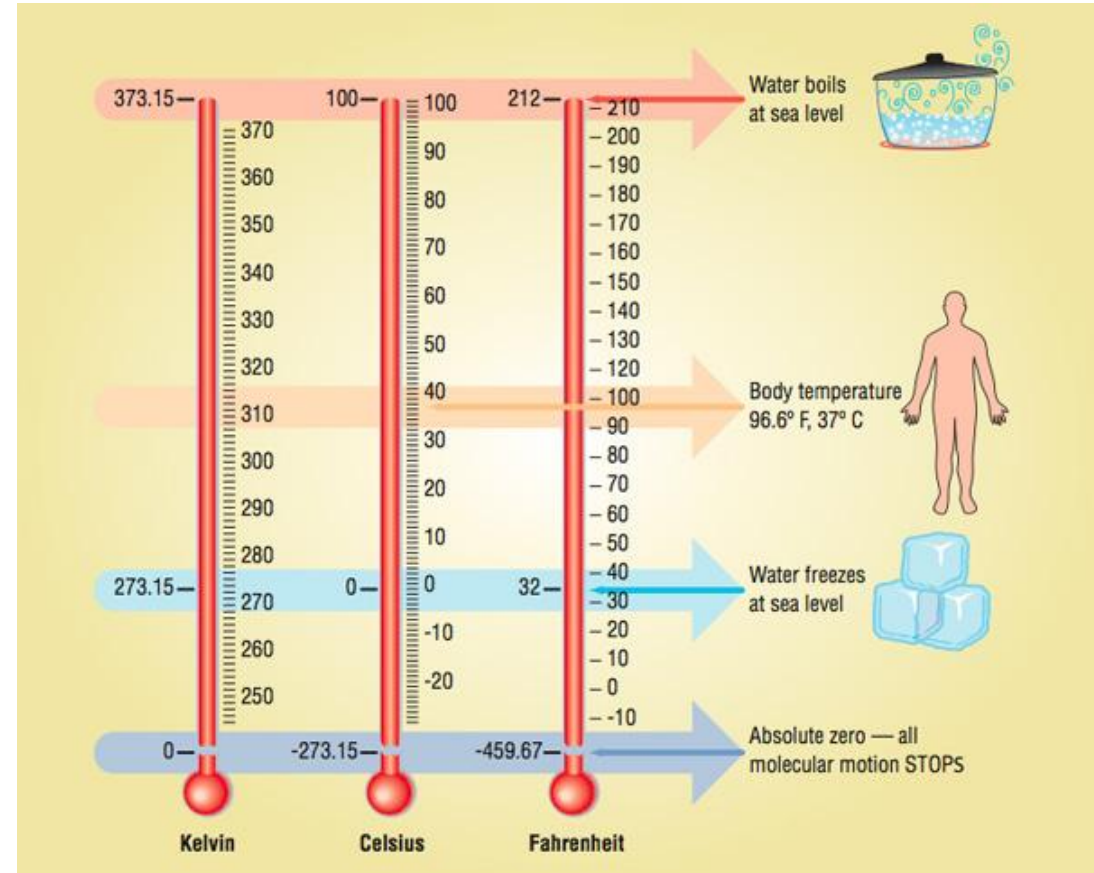
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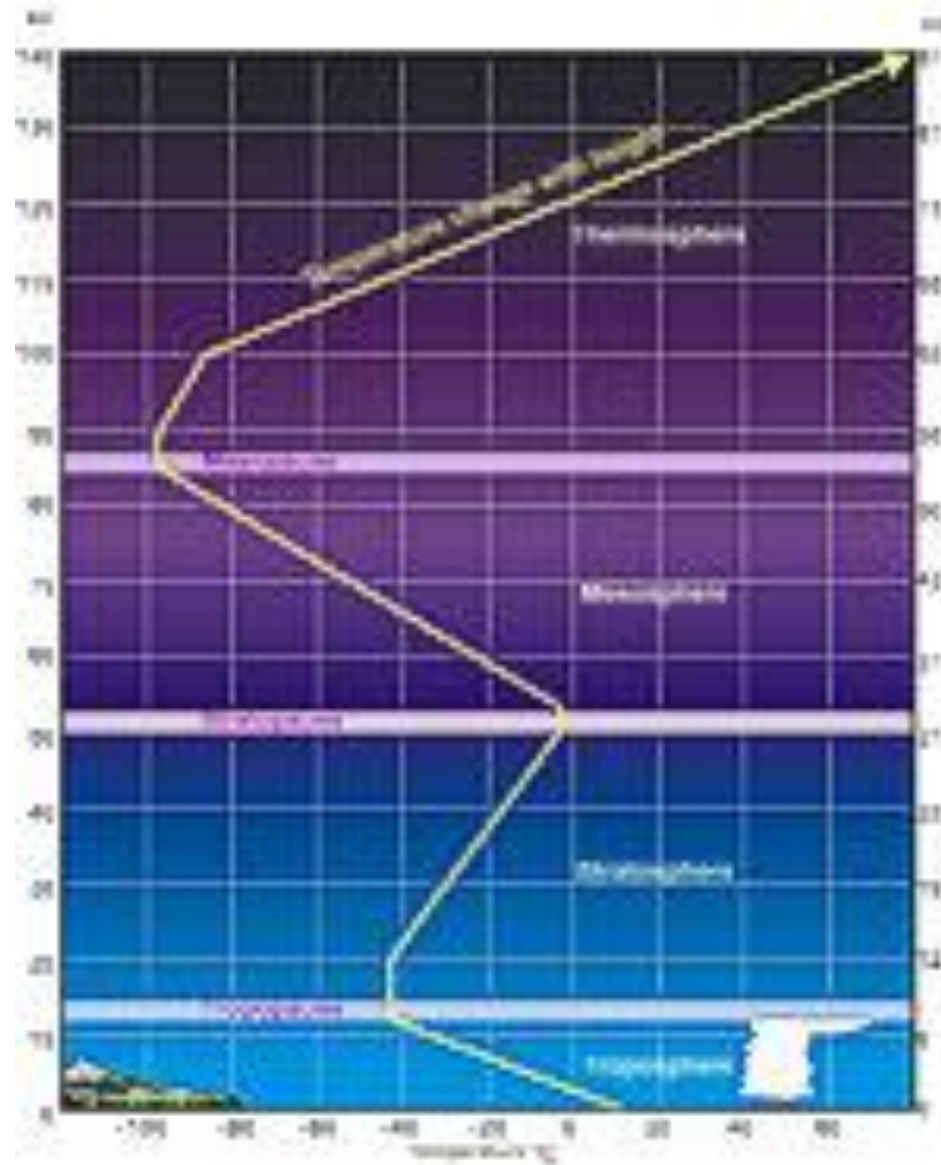
Temperature

The layer closest to the earth's surface is the troposphere and it is a very important layer to meteorologists because it is the layer that contains all of our weather.

Sunlight warms the earth's surface and then the surface warms the air above it. As one moves away from the earth's surface (the heat source), the air becomes cooler. This is why temperature usually decreases with height in the troposphere.

The layer closest to the earth's surface is called the :

- A) Thermosphere
- B) Stratosphere
- C) Troposphere
- D) Mesosphere



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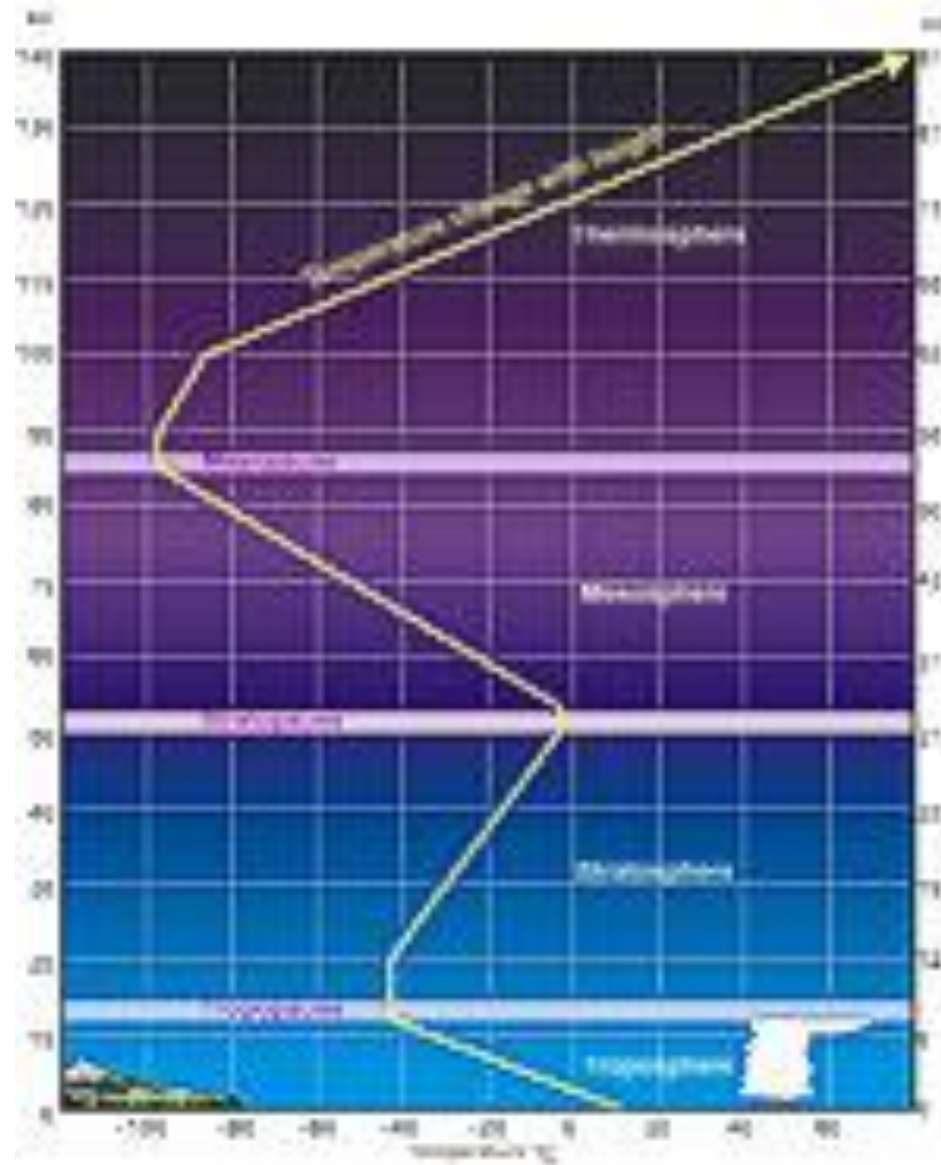
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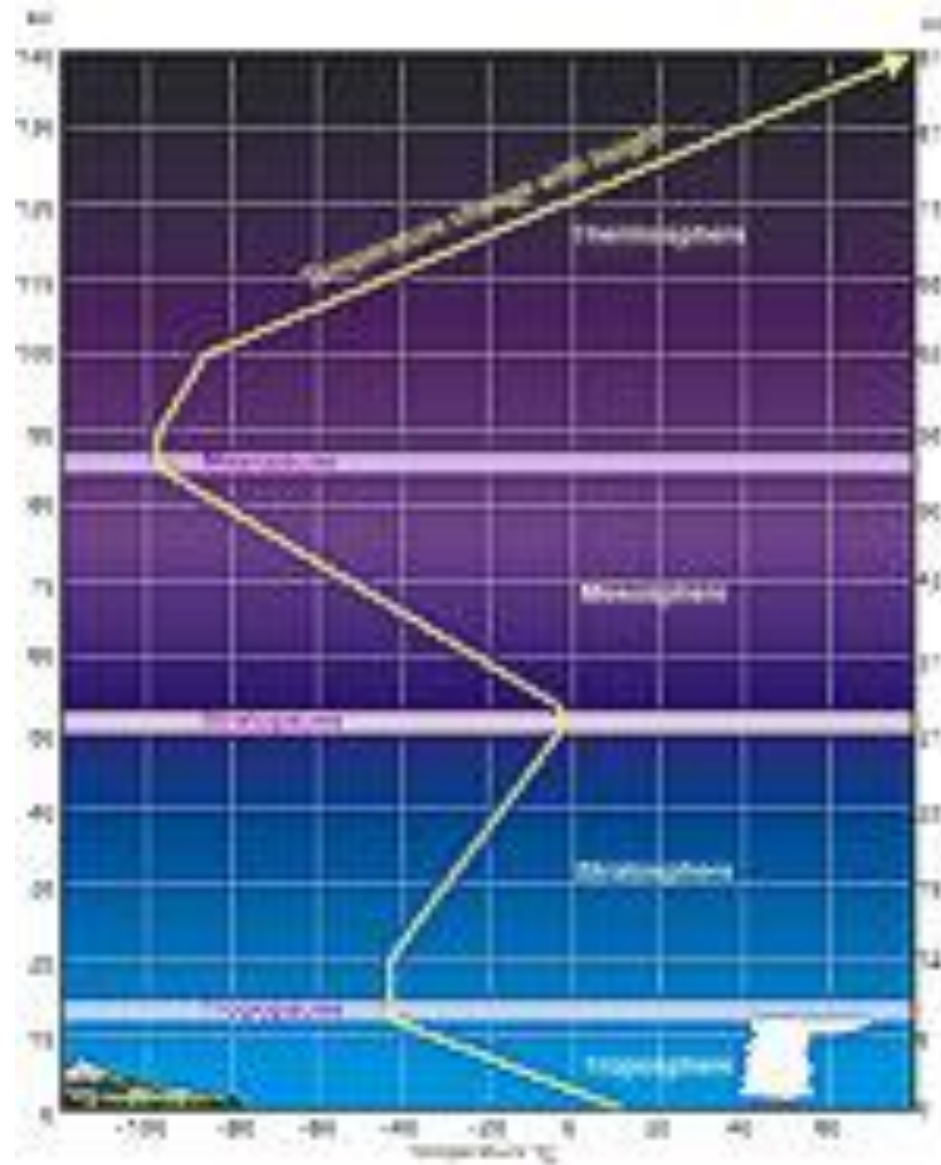
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The layer closest to the earth's surface is called the Troposphere.



Next

End of Demonstration