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**Book I Chapter 1 – Lesson 1 REVIEW**

1. Provide three facts about the atmosphere of Earth.

-atmosphere is a mixture of gases that surround the Earth

-mostly made of nitrogen (78%) and oxygen (21%)

-has 5 layers

-provides protection to Earth

-Earth’s gravity holds the atmosphere in place

-the higher you move within the atmosphere, air pressure decreases

-depending on the composition of the layers of the atmosphere, temperatures may increase or decrease

-water is found in the atmosphere in all three states – gas, liquid and solid

2. What is air pressure, and why does air pressure decrease as altitude increases?

Air pressure is a measure of the force exerted by molecules – in this case, air molecules. The force is affected by gravity. If more molecules are forced into a smaller space, the molecules will exert more force and the air pressure will be high. This happens at the surface of Earth where the force of gravity is greatest. If the air molecules are spread out over a large area, the pressure will be much lower. This occurs when gravitational forces weaken. The higher you move through the atmosphere, the force of gravity from Earth weakens, causing air pressures to decrease.

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| NOT ON FORMATIVE ASSESSMENT3. What determines the temperature of the different atmospheric layers? (make sure to explain the relationship between molecules and how molecules create ‘hot’ and ‘cold’)Temperatures vary greatly throughout the layers of the atmosphere. Depending on the composition of the layers, temperatures may increase or decrease. Molecules of matter create the ‘hot’ and ‘cold’ that we feel, because molecules move. If you squeeze a large amount of molecules into a small space, the molecules bump into each other. This creates ‘heat’ and we can feel an increase in temperature. If there are less molecules present, or the molecules are not squeezed into a small area but are instead allowed to spread out, it becomes more difficult to feel the ‘hot’ or ‘cold’ temperatures. The thermosphere has the ‘highest’ temperatures of all five layers, but we would not be able to feel the heat in this layer because the molecules in this layer are spread out. The molecules absorb a tremendous amount of energy from the Sun causing the high temperatures in this layer, but because the molecules are so spread out, there are not enough molecules that have absorbed this energy from the Sun to heat our skin and cause us to ‘feel’ any heat.**Temperature** is the measure of how much energy a molecule has absorbed.**Heat** is a measure of all the molecular motion within a system. |

Use the diagram to label the five different layers of the atmosphere.

A EXOSPHERE

B THERMOSPHERE

C MESOSPHERE

D STRATOSPHERE

E TROPOSPHERE

|  |  |
| --- | --- |
| height (in km) increase | ABCDE |
|  decrease increase |
| temperature of atmosphere |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| exosphere | thermosphere | mesosphere | stratosphere | troposphere |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| This layer is where satellites orbit EarthThis layer marks the ‘edge’ of outer spaceThe air pressure is lowest in this layerthis layer has very few molecules because they can escape Earth’s gravity and go into spacethe prefix for this layer means ‘out’data about temperatures in this layer are difficult to gather because there are very few molecules in this layer | Auroras form within this layerThis is the hottest layer of our atmosphereas you rise through this layer, temperatures increase to 3,600 degrees Farenheit at the top and air pressures continue to decreasethe Space Shuttle orbits in this layerthe prefix for this layer means ‘ heat’this is the layer directly below the exosphere | This layer is very thick and slows down meteorsthe prefix for this layer means ‘middle’this is the third layer of the atmospherethe higher you go in this middle layer, the temperatures decrease and air pressure decreasesthis layer is directly above the stratospherethis layer has the coldest temperatures | The ozone layer is contained within this layerthere is very little water in this layertemperatures in this layer rise as you get higher in this layer due to the formation of ozone and air pressures continue to decreasethe prefix for this word means ‘layered’there is no mixing of gases in this part of the atmosphere, so the gases are layeredweather balloons can travel to this part of the atmosphere to gather data | Temps decrease as you rise through this layerThis is the lowest layer All of the Earth’s weather occurs within this layerThe air pressure is greatest in this layerThe prefix for this layer means ‘changing’This layer extends 6-20 km from the surface of Earth |