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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 ASSESSMENT  3. 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 | A  B  C  D  E |
| decrease increase |
| temperature of atmosphere |

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

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