

Grade 8				
Ch. 8 Lesson 1				
Earth and Space Science				
Page #	Question	Answer(s)	Links/Sources	Student Resources
272	How do you think interactions between air and water affect weather?	*Sample answer: Interactions between air and water can cause clouds and storms to form.		
272	How does water enter Earth's atmosphere?	*Through the process of evaporation.		
273	Why is the heating uneven?	Sample answer: Because the Earth's round shape, the tilt of its axis and its uneven surface, i.e. mountains, valleys, plateaus, etc.		
273	Do you think the temperatures of these surfaces contribute to your local winds?	Yes.		
274	What might happen to Earth's atmosphere if the population of producers sharply increased?	*The atmosphere's oxygen levels would increase and carbon dioxide would decrease.		
274	How did He design it to protect life?	Sample answer: The atmosphere is designed to keep out harmful energy from the Sun, to protect Earth from meteors and other space debris, and to provide the air needed to sustain life.		
274	What would the Earth be like without an atmosphere?	Sample answer: There would be no life on Earth, the Earth would be silent (sound requires a medium to transmit waves), the sky would be black, rivers and lakes would boil. temperatures would be too extreme for life to survive.		
274	How do you think Earth's atmosphere has changed over time?	Sample answer: I think air pollution has increased, and that carbon dioxide levels are increasing.		
274	What processes affect Earth's atmosphere?	Sample answer: Evaporation, condensation, precipitation, as well as other natural and human caused activities such as changes in the Sun, volcanoes, and human caused pollution.		
275	How is the composition of Earth's atmosphere an example of God's care for us?	*God made sure that the atmosphere had the proper mix of gases needed by the living things He designed.		
275	What do some scientists believe about the beginning of the Earth?	*They believe in the Big Bang theory, which is an effort to explain what happened scientifically at the "start" of the universe.		
275	Why are water vapor, carbon dioxide, and argon called "trace gases"?	*They exist in very small amounts in the atmosphere.		
276	What gases do you breathe?	*Answers should include nitrogen, oxygen, carbon dioxide, and traces of other atmospheric gases.		

276	How does it relate to the atmosphere?	*Jeremiah 10:12-13 describes God's power by explaining how He created the atmosphere.		
276	In which regions of the world would you expect the highest and lowest levels of water vapor? Why	Sample answer: I would expect the highest levels of water vapor in the rain forest areas, coastal areas, and areas around large lakes because these are the areas where there is lots of water that can evaporate into the atmosphere. I would expect the lowest water vapor to be in the desert areas, high elevation areas, and some interior areas because these are areas where there is much less water available for evaporation.		
276	Where do these particulates come from?	Sample answer: They are lifted from the Earth's surface by winds, they come from the smoke of fires, from volcanic eruptions, from plants, and from human caused air pollution (factory and vehicle emissions).		
276	How long do these particles stay in the atmosphere?	Sample answer: Large particles fall to the surface fairly rapidly (hours, days, months) but very small particles can stay in the atmosphere for very long periods (one or more years).		
276	Why have scientists found soot samples from the Industrial Revolution in samples of ice from Antarctica?	Because when these particles got into the atmosphere around large industrial centers, the Earth's winds carried them around the Earth where they fell to the surface. Particles that fell on the ice of Antarctica were preserved in the ice as it continued to form above them. Note: Some students may not know what the Industrial Revolution was, a simple explanation would help their understanding.		
276	Why was the soot found in ice samples that were taken from deep beneath the surface?	Because the particles fell long ago and the ice continued to form above the particles.		
276	Why does air pressure decrease with altitude?	Sample answer: Because there are fewer air molecules pushing on you.		
276	Does the title match the data you are representing?	*Note that the circle of the pie chart represents the atmosphere. Each "slice" or sector of the chart represents a gas or combination of gases in the atmosphere.		
276	Why is the sector for nitrogen bigger than the sectors for other gases in the atmosphere?	*Nitrogen makes up most of the Earth's atmosphere.		
277	What would happen to a balloon as it rises through the atmosphere?	*Because atmospheric pressure decreases in increasing altitude, the balloon would increase in size.		
277	What causes the burning candle to stop burning?	*Sample answer: The candle stopped burning because oxygen is needed for combustion. The candle under the glass used up the oxygen.		

277	What human activities might add similar materials to the atmosphere?	*Sample answer: Burning wood or fossil fuels for energy.		
277	What natural events might add similar materials to the atmosphere?	*Forest fires or volcanic eruptions.		
277	Why do you think this is so?	Sample answer: Because at high altitudes, the air is "thinner" and more distance is needed to get the needed lift to get the plane into the air.		
277	Why does the temperature decrease?	Sample answer: Because there is less air molecules to hold the heat.		
277	What would explain the increase in temperature with increasing altitude? Why?	Sample answer: Because some of the upper levels of the atmosphere absorb more light than lower levels this causes temperature in these layers to get warmer.		
277	What protects us from the temperatures experienced in the uppermost layers of the atmosphere?	Sample answer: The ozone layer.		
277	Why do people who are born and raised in extreme mountainous regions not get altitude sickness?	*They have adapted to local atmospheric conditions.		
278	What effect will a sudden drop of pressure inside the can have?	The sides of the can will crush inward.		
278	What needs to be done to reverse the crushing effect?	Sample answer: The opening of the can will need to be plugged then the temperature of the interior of the can will need to increase. Note: This process must be closely supervised by the instructor.		
279	What two sub-layers exist in the atmosphere?	*The ozone layer and the ionosphere.		
279	Why are these sub-layers important?	*The ozone layer absorbs certain harmful rays from the Sun, protecting life on Earth from these rays. The ionosphere reflects and absorbs radio waves making it possible to receive AM radio transmission over greater distances.		
279	What might happen to rates of skin cancer if the ozone layer were damaged significantly?	*Rates of skin cancer would increase.		
279	How does air pressure change as you travel through layers of the atmosphere?	*Air pressure decrease as you move up through the atmosphere and increases as you move down through the atmosphere.		
279	Do you think that the atmospheric layers remain at uniform heights around the world? Explain your reasoning.	*Sample answer: No. Their heights depends on temperature and density.		
279	Why would you feel cold in this layer?	Sample answer: Because there is very few air molecules to hold the heat.		

279	What is the relationship between low density and high temperatures in this layer?	Sample answer: Part of this layer contains a denser layer of gas which allows for higher temperature and the ozone layer is here which absorbs the Sun's light and harmful rays.		
279	What might explain the temperature trend in this layer?	Sample answer: The air is gets less dense as altitude in this layer increase which causes a steady decrease in temperature.		
279	Why can supersonic jets fly faster in this layer of the atmosphere?	Sample answer: The air is less dense and it is easier to move through.		
279	What factors of this layer explain why most of Earth's weather occurs here?	Sample answer: Because it has decreasing temperature and water vapor as altitude increases, and gases and particulate matter collect here.		
280	How can you demonstrate changing air pressure?	*By blowing on a lightweight objects, students can observe where they have changed air pressure when the object moves.		
280	What happens to the paper?	It lifts up.		
280	What happened as you blew across the top of the paper?	Sample answer: The air pressure on the top of the paper decreased and allowed the higher pressure of the air below the sheet to lift it up.		
	* Means the answer is found in the TE.			