Respiratory system

Science, Chemistry

Respiratory System Mechanics E X E R C I S E NAME: Ailyn Sedaria-Lapuz LAB TIME/DATE: March 3, 2013 1. Define each of the following terms: - respiration : means exchange of gases (oxygen and carbon dioxide) between a living organism and its environment; Breathing. - ventilation: movement of air in and out of the lungs - alveoli: small air sacs or cavities in the lung that give the tissue a honey comb appearance and expand its surface area for the exchange of oxygen. - diaphragm: a dome-shaped muscle that divides the thoracic and abdominal cavities– contracts, making the thoracic cavity larger. - inspiration : Reduces the pressure within the thoracic cavity, allowing atmospheric gas to enter the lungs. - expiration: When the diaphragm relaxes, the pressure within the thoracic cavity increases, forcing air out of the lungs 2. Explain how the respiratory and circulatory systems work together to distribute oxygen to, and remove carbon dioxide from the cells of the body. The circulatory system and the respiratory system work closely together to ensure that organ tissues receive enough oxygen. Oxygen is required for cellular functions. The air breathed in and held in the lungs is transferred to the blood. The blood is circulated by the heart, which pumps the oxygenated blood from the lungs to the body. Additionally, the two body systems work together to remove carbon dioxide, which is a metabolic waste product. 3. Match each of the definitions in Column A with the appropriate term in Column B. Column A I__the percentage of vital capacity exhaled during a 1-second period of the FVC test D__the amount of air that can be taken into the lungs beyond the tidal volume E__the amount of air that can be expelled from the lungs beyond the tidal volume A__the volume of a normal breath C__the maximum amount of air that can be

voluntarily moved in and out of the lungs B__the proportion of pressure that a single gas exerts within a mixture G__the amount of air that can be expelled completely and rapidly as possible after a maximum inspiration F__the amount of air left in the lungs after a maximum exhalation vital capacity plus residual volume Column B a. tidal volumE b. partial pressure c. inspiratory reserve volume d. expiratory reserve volume e. vital capacity f. residual volume g. total lung capacity h. forced vital capacity (FVC) i. forced expiratory volume (FEV1) 4. Fill in the typical values (in ml) for each of the following terms. tidal volume: Male 600ml Female 500ml inspiratory reserve volume: Male 3000ml Female 1900ml expiratory reserve volume: Male 1200ml Female 800ml vital capacity: Male 4800ml Female 3200ml residual volume: Male 1200ml Female 1000ml total lung capacity: Male 6000ml Female 4200ml 5. Circle the correct boldfaced term. Emphysema is a lung problem that causes a(n) decrease / increase in tidal volume. 8. What is the role of surfactant in respiration? Lower the surface tension in the fluid in the alveoli so that they can expand more easily. 9. What would happen if surfactant were not present? Very difficult to breathe... newborn survivability goes way up after they are past the point in development that make surfactant (24th week). 10. What happens in pneumothorax? The pleural sac that holds the lungs gets a hole in it and there is no longer the 'negative' pressure holding the lungs open proportionally with the chest wall volume... the hole-side lung shrivels up. 11. Why is it important that intrathoracic pressure be kept lower than atmospheric pressure? so that air from outside can enter the lungs. 12. What happens to the partial pressure of carbon dioxide in the blood during rapid breathing? Rapid breathing can lead to a

condition called hyperventilation. Hyperventilation occurs when a person breaths more rapidly than the body demands. When a person hyperventilates, the CO2 blood concentration (partial pressure) decreases below normal levels. 13. What happens to the partial pressure of carbon dioxide during rebreathing? Rebreathing may result in decreasing concentrations of oxygen & increasing concentrations of carbon dioxide in the blood. 14. What happens to the partial pressure of carbon dioxide during breathholding? Pressure carbon dioxide levels rise during breath holding. The longer the breath is held, the more PCO2 will rise, even to the point of syncope occurring (passing out). The following questions refer to Activity 9: Comparative Spirometry. 15. What was the value obtained for the (FEV1/FVC) _ 100% with “ normal breathing"? 80% 16. What effect did “ emphysema breathing" have on FVC and FEV1? 50% 17. In “ emphysema breathing" which of the two values, FVC and FEV1 changed the most? FEV1 18. What effect did “ acute asthma attack breathing" have on FVC and FEV1? have a large difference in amount. The effect is hard. 19. In “ acute asthma attack breathing" which of the two values, FVC and FEV1 changed the most? FEV1 20. Describe the effect that the inhaler medication had on the FVC and FEV1. The inhaler medication had a good effect to the person who have asthma. 21. Did the values return to “ normal"? Explain. Yes, because the breathing back to normal. 22. During “ moderate exercise breathing, " which volumes changed the most? none 23. During “ heavy exercise breathing, " which volumes changed the most? none