

1. What are the functions of the respiratory system?
 - a. **Oversees gas exchanges between the blood and external environment**
 - b. **Exchange of gases takes place within the lungs in the alveoli**
 - c. **Passageways to the lungs purify, warm, and humidify the incoming air**
2. What are the parts of the upper respiratory tract?
Nose, Pharynx, Nasal cavity, Larynx
3. What are the parts of the lower respiratory tract?
Trachea, Bronchi, Bronchioles, alveoli, diaphragm, lungs
4. What are the cell types and layers of the respiratory mucosa?
pseudostratified epithelial cells and mucosal cells mostly. Layers of elastic and hyaline cartilage line the tubes, like the trachea and bronchi to offer support and prevent collapse
5. What are the components of the respiratory defense system?
Mucous membranes that are sticky to trap particles, Ciliated pseudostratified epithelium to filter out particles and invaders, tonsils that provide lymphoid protection.
6. The area located behind the oral cavity and between the nasal cavity and the larynx is the **Pharynx**
7. What happens when the diaphragm is lowered? **Air moves into lungs (inspiration)**
Raised? **Air moves out of lungs (expiration)**
8. What is the function of the hyaline cartilage of the trachea? **reinforce and provide support and prevent collapse**
9. What protein combines with oxygen in the blood (for transport)? **hemoglobin**
10. What is the triangular slit that opens and closes during talking called? **glottis**
11. Where is the respiratory center located? **medulla and the pons**
12. What structure resembles a bunch of grapes and allows for diffusion of gases within the lungs?
alveoli
13. What is the function of the mucus membrane that lines the nasal cavities? **Traps foreign invaders**
14. What is the main force for pushing air out of the lungs? **Diaphragm and intercostal muscles relaxing causing interior pressure to rise and forcing air out**
15. What is the Adam's Apple? **Extension of thyroid cartilage in neck**
16. How many lobes are in the right lung? **3 (The left lung has 2)**
17. What happens to your respiration rate with the level of CO₂ in the blood rises? **Increases**
18. What tool would be used to measure "vital capacity"? **spirometer**
19. What is hypoxia? **Lower than normal oxygen levels in blood**
20. In what body cavity are the lungs located? **Thoracic**
21. What structure prevents food from entering the airway during swallowing? **Epiglottis**
22. What fluid lubricates the lungs? **surfactant**
23. Where does the trachea lie in relation to the esophagus? **anterior/ventral**

24. What is the main vessel that sends deoxygenated blood from the heart to the lungs? **Pulmonary artery**
25. Name a genetic disorder that affects the respiratory system: **cystic fibrosis**
26. Is breathing a voluntary or involuntary act? **Involuntary, but can change rate voluntarily**
27. How does oxygen enter blood capillaries? (Name the process.) **diffusion**
28. **Residual** volume is the volume that remains after the most forceful exhalation. (1200 ml).
29. A disease of the lungs in which the walls of alveoli lose elasticity and remain filled causing increased chest size (barrel-chested) is called **Emphysema**.
30. Breathing in; or inhaling is called **inspiration**.
31. Breathing out; exhaling is called **expiration**.
32. Difficult expiration caused by spasms in the muscles surrounding the bronchioles, often caused by allergic reactions, is called **asthma**.
33. Inflammation of the bronchi is called **bronchitis**.
34. Inflammation of the pleura is called **pleurisy**.
35. Mucus in the respiratory system is pushed upward by **Cilia and coughing**.
36. Normal breathing volume (normally about 500 ml. per breath) is called **tidal volume**.
37. Oxygen deficiency is called **cyanosis**.
38. Secondary bronchi branch into smaller tubes called **bronchioles**.
39. The **visceral** pleura cover the lungs. **parietal** pleura lines the thoracic cavity.
40. The **apex** is the narrow portion at the top of the lungs.
41. The **inspiratory reserve volume (IRV)** is the volume that can be inhaled after normal inspiration. (2100 - 3200 ml)
42. The **larynx** is commonly called the voice box.
43. The cavities inside the frontal, maxillary, sphenoid, & ethmoid bones that drain into nasal cavities are called **sinuses**.
44. The exchange of oxygen from blood to cells is called **internal** respiration.
45. The exchange of oxygen from air to blood is called **external** respiration.
46. The maximum breathing volume (usually approx. 4800 ml) is called **vital** capacity.
47. The millions of tiny sacs that exchange oxygen and carbon dioxide are called **alveoli**.
48. The nasal **conchae** are small partitions of bone, covered in mucosa, that provide extra surface area for the mucous membranes and increase turbulence in nasal cavity.
49. The term **external** nares refers to the **nostrils**.
50. The two tubes that branch off the trachea are called the **bronchi**.
51. The volume that can be exhaled after expiring tidal volume (1000 - 1200 ml) is called **expiratory reserve volume (ERV)**.
52. The wall that divides the nasal cavities is called the **septum**.
53. Tonsils contain **lymphoid** tissue.
54. Hemoglobin with oxygen attached is called **oxyhemoglobin**.
55. Normal respiration is called **eupnea**.
56. Difficulty breathing is referred to as **dyspnea**.

57. Most of the body's CO₂ is transported with what molecule? bicarbonate ion

58. Explain the chemical factors that influence respiratory rate and depth.

Respiratory rate and depth can be altered by chemical factors such as levels of carbon dioxide and oxygen in the blood.

The most important stimuli are increased levels of carbon dioxide and decreased blood pH that act on the medulla centers of the brain, increasing respiration rate.

Also, decreased oxygen levels are detected by the chemoreceptors in the aorta and carotid arteries, which communicate with the medulla, increasing respiration rate.

59. What is residual volume? Amount of air left in lungs at all times even after forceful exhalation

60. How does cystic fibrosis affect the respiratory system?

It causes there to be an over production of mucous in the lungs and digestive tract. In the lungs, it diminishes the respiratory capabilities and oxygen diffusion into blood.

61. Explain how differences in air pressure leads to inspiration and expiration.

A pressure gradient is what causes air to move. During inspiration, the diaphragm and internal intercostal muscles contract forcing the thorax to widen and deepen, thus reducing pressure and air will move into lungs. During expiration, the diaphragm and internal intercostals muscles relax and increase pressure forcing air out of lungs. Air always moves from an area of high pressure to low pressure.

62. List the four steps in respiration and briefly explain each.

Pulmonary ventilation – breathing in and out

External Respiration – oxygen and CO₂ gas exchange in the alveoli

Gas Transport – blood bringing oxygen to tissues and CO₂ away from tissues to be exchanged

Internal Respiration – gas exchange between blood and body tissues, oxygen into cells and CO₂ out.

63. What are some effects of aging on the respiratory system?

Decreased breaths per minute, decreases lung elasticity, decreased sensitivity to oxygen and CO₂ levels in blood.

64. How does lung cancer impact respiration?

It metastasizes very quickly and spreads throughout body. Causes mucosal cells to lose normal function and proliferate out of control. Causes impaired lung function and respiration.

65. What is atelectasis?

collapsed lung or process of lung collapsing

66. What are some of the common non-respiratory air movements?

Coughing, sneezing, laughing, hiccupping, crying, yawning

67. Describe briefly the following disorders: asthma, decompression sickness (the Bends), emphysema, pleurisy, pneumonia, SIDS, tuberculosis, and COPD.

Asthma – usually allergen or environmentally induced. Chronic inflammation and constriction of the airways.

The Bends – When a diver ascends too quickly underwater and is not allowed proper time to equalize pressure. Nitrogen gas builds up in the body and causes gas emboli, excruciating pain, and can lead to death.

Emphysema - A disease of the lungs in which the walls of alveoli lose elasticity and remain filled causing increased chest size (barrel-chested), usually secondary to smoking

Pleurisy – inflammation of the pleural linings of lungs and thoracic cavities. Friction builds and causes great pain and less lubrication of movements. painful breaths result.

Pneumonia – lung infection where fluid accumulates impairing normal breathing and respiration. Can lead to atelectasis.

SIDS – where infant stops breathing and dies usually at night very suddenly. Causes can be sleep apnea, heart rhythm abnormality and defects

Tuberculosis – chronic lung disease and infection caused by a mycobacterium. Very hard to treat and cure. Called consumption in the prairie days.

COPD – chronic obstructive pulmonary disease - Patients almost always have a history of smoking

- **Labored breathing (dyspnea) becomes progressively more severe**
- **Coughing and frequent pulmonary infections are common**