



## Chapter 36 Exercises

### Review Questions

- The respiratory system \_\_\_\_\_.
  - provides body tissues with oxygen
  - provides body tissues with oxygen and carbon dioxide
  - establishes how many breaths are taken per minute
  - provides the body with carbon dioxide
- Air is warmed and humidified in the nasal passages. This helps to \_\_\_\_\_.
  - ward off infection
  - decrease sensitivity during breathing
  - prevent damage to the lungs
  - all of these
- Which is the order of airflow during inhalation?
  - nasal cavity, trachea, larynx, bronchi, bronchioles, alveoli
  - nasal cavity, larynx, trachea, bronchi, bronchioles, alveoli
  - nasal cavity, larynx, trachea, bronchioles, bronchi, alveoli
  - nasal cavity, trachea, larynx, bronchioles, bronchi, alveoli
- The inspiratory reserve volume measures the \_\_\_\_\_.
  - amount of air remaining in the lung after a maximal exhalation
  - amount of air that the lung holds
  - amount of air that can be further exhaled after a normal breath
  - amount of air that can be further inhaled after a normal breath
- Of the following, which does *not* explain why the partial pressure of oxygen is lower in the lung than in the external air?
  - Air in the lung is humidified; therefore, water vapor pressure alters the pressure.
  - Carbon dioxide mixes with oxygen.
  - Oxygen is moved into the blood and is headed to the tissues.
  - Lungs exert a pressure on the air to reduce the oxygen pressure.
- The total lung capacity is calculated using which of the following formulas?
  - residual volume + tidal volume + inspiratory reserve volume
  - residual volume + expiratory reserve volume + inspiratory reserve volume
  - expiratory reserve volume + tidal volume + inspiratory reserve volume
  - residual volume + expiratory reserve volume + tidal volume + inspiratory reserve volume
- How would paralysis of the diaphragm alter inspiration?
  - It would prevent contraction of the intercostal muscles.
  - It would prevent inhalation because the intrapleural pressure would not change.
  - It would decrease the intrapleural pressure and allow more air to enter the lungs.
  - It would slow expiration because the lung would not relax.
- Restrictive airway diseases \_\_\_\_\_.
  - increase the compliance of the lung
  - decrease the compliance of the lung
  - increase the lung volume
  - decrease the work of breathing
- Alveolar ventilation remains constant when \_\_\_\_\_.
  - the respiratory rate is increased while the volume of air per breath is decreased
  - the respiratory rate and the volume of air per breath are increased
  - the respiratory rate is decreased while increasing the volume per breath
  - both a. and c.
- Which of the following will *not* facilitate the transfer of oxygen to tissues?
  - decreased body temperature
  - decreased pH of the blood
  - increased carbon dioxide
  - increased exercise

11. The majority of carbon dioxide in the blood is transported by \_\_\_\_\_.
- a. binding to hemoglobin
  - b. dissolution in the blood
  - c. conversion to bicarbonate
  - d. binding to plasma proteins
12. The majority of oxygen in the blood is transported by \_\_\_\_\_.
- a. dissolution in the blood
  - b. being carried as bicarbonate ions
  - c. binding to blood plasma
  - d. binding to hemoglobin

### Critical Thinking Questions

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13. Describe the function of these terms and describe where they are located: main bronchus, trachea, alveoli, and acinus.
14. How does the structure of alveoli maximize gas exchange?
15. What does FEV1/FVC measure? What factors may affect FEV1/FVC?
16. What is the reason for having residual volume in the lung?
17. How can a decrease in the percent of oxygen in the air affect the movement of oxygen in the body?
18. If a patient has increased resistance in their lungs, how can this be detected by a doctor? What does this mean?
19. How would increased airway resistance affect intrapleural pressure during inhalation?
20. Explain how a puncture to the thoracic cavity (from a knife wound, for instance) could alter the ability to inhale.
21. When someone is standing, gravity stretches the bottom of the lung down toward the floor to a greater extent than the top of the lung. What implication could this have on the flow of air in the lungs? Where does gas exchange occur in the lungs?
22. What would happen if no carbonic anhydrase were present in red blood cells?
23. How does the administration of 100% oxygen save a patient from carbon monoxide poisoning? Why wouldn't giving carbon dioxide work?