

## Fluid, Electrolyte and Acid-Base Balance: Acid-Base Homeostasis

- List the three important buffer systems in the body:
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- Write the equation showing the relationship of CO<sub>2</sub> and H<sub>2</sub>O levels with bicarbonate and hydrogen ion levels:  
$$\text{CO}_2 + \text{H}_2\text{O} \leftrightarrow \text{_____} \leftrightarrow \text{_____}$$
- A decrease in respiration will result in \_\_\_\_\_ CO<sub>2</sub> and will shift the equation to the \_\_\_\_\_, resulting in an increase in \_\_\_\_\_ ions, making the plasma more \_\_\_\_\_.
- When body pH is decreased, what are the three compensatory renal mechanisms to restore pH?
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- Normal arterial pH is \_\_\_\_\_ to \_\_\_\_\_.
  - What is the pH in alkalosis? \_\_\_\_\_
  - What is the pH in acidosis? \_\_\_\_\_
- With ketoacidosis, show what happens to the following:
  - \_\_\_\_\_ Plasma pH
  - \_\_\_\_\_ (*Left or right*) shift of the carbonic acid/bicarbonate system
  - \_\_\_\_\_ Bicarbonate levels
  - \_\_\_\_\_ Respiratory rate
  - \_\_\_\_\_ Renal excretion of H<sup>+</sup>
- With metabolic alkalosis, show what happens to the following:

- a. \_\_\_\_\_ Plasma pH
- b. \_\_\_\_\_ (*Left or right*) shift
- c. \_\_\_\_\_ Bicarbonate levels
- d. \_\_\_\_\_ Respiratory rate
- e. \_\_\_\_\_ Renal excretion of bicarbonate

8. With respiratory acidosis, show what happens to the following:

- a. \_\_\_\_\_ Plasma pH
- b. \_\_\_\_\_ (*Left or right*) shift
- c. \_\_\_\_\_ Respiratory rate
- d. \_\_\_\_\_ Renal excretion of bicarbonate
- e. \_\_\_\_\_ Renal excretion of H<sup>+</sup>

9. With respiratory alkalosis, show what happens to the following:

- a. \_\_\_\_\_ Plasma pH
- b. \_\_\_\_\_ (*Left or right*) shift
- c. \_\_\_\_\_ Respiratory rate
- d. \_\_\_\_\_ Renal excretion of bicarbonate
- e. \_\_\_\_\_ Renal excretion of H<sup>+</sup>