MECHANISM OF BREATHING

1. a) The movement of air into and out of the lungs is called _____.

   b) The two phases of this movement are _____ and _____.

2. The respiratory centers are located in the brain, in the _____ and _____.

3. The respiratory muscles are:

   1) the external and internal _____ muscles, which are supplied by the _____ nerves.

   2) the _____, which is supplied by the _____ nerves.

4. Contractions of the respiratory muscles produce changes in _____ within the bronchial tree and alveoli to bring about ventilation.

5. Match each air pressure with the statements that apply to each.

   Use each letter once. Each answer line will have two correct letters.

   1) Atmospheric pressure _____
   2) Intrapleural pressure _____
   3) Intrapulmonic pressure _____

   A. The pressure in the bronchial tree and alveoli
   B. The pressure of the air around us
   C. The pressure within the potential pleural space
   D. 760 mmHg at sea level
   E. Fluctuates below and above atmospheric pressure during breathing
   F. Always slightly below atmospheric pressure

INHALATION (INSPIRATION)

1. With respect to normal inhalation, number these events in proper sequence.

   1 The medulla generates motor impulses.

   _____ The chest cavity is enlarged in all directions.

   _____ The diaphragm and external intercostal muscles contract.

   _____ Intrapulmonic pressure decreases.

   _____ Motor impulses travel along the phrenic and intercostal nerves.

   _____ The chest wall expands the parietal pleura, which expands the visceral pleura which in turn expands the lungs.

   _____ Air enters the lungs until intrapulmonic pressure equals atmospheric pressure.

2. A deep breath (more than normal) requires a more forceful _____ of the respiratory muscles, which in turn would bring about greater expansion of the _____.

EXHALATION (EXPIRATION)

. With respect to normal exhalation, number these events in proper sequence.

1 Motor impulses from the medulla decrease.

_____ The chest cavity becomes smaller, and the elastic connective tissue around the alveoli recoils.

_____ Intrapulmonic pressure rises above atmospheric pressure.

_____ The lungs are compressed.

_____ The diaphragm and external intercostal muscles relax.

_____ Air is forced out of the lungs until intrapulmonic pressure equals atmospheric pressure.

2. Normal exhalation is considered a passive process because it does not require the _____ of the respiratory muscles.

3. A forced exhalation requires contraction of the _____ muscles to pull the ribs _____, or contraction of the _____ muscles to compress the abdominal organs and push the diaphragm _____.

EXCHANGE OF GASES

. a) External respiration is the exchange of gases between the air in the _____ and the _____ in the pulmonary capillaries.

b) Internal respiration is the exchange of gases between the blood in the _____ and the tissue fluid (cells).

2. The two respiratory gases are _____ and _____.

3. a) Inhaled air (the atmosphere) is approximately _____ % oxygen and _____ % CO_2.

b) Exhaled air is approximately _____ % oxygen and _____ % CO_2.

4. The value that is used to express the concentration of O_2 and CO_2 in the air or in body fluids is called _____ and is abbreviated _____.