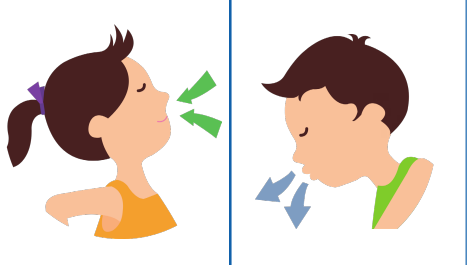
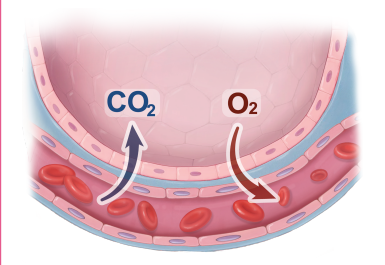
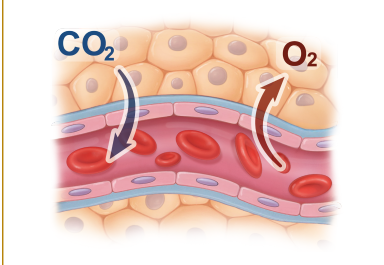


CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Introduction to Respiration

◆ **Respiration:** The process of bringing oxygen into the bloodstream and transporting it to cells.

- Can be divided into ___ distinct parts:

| 1. Ventilation (Breathing) | 2. External Respiration | 3. Internal Respiration |
|---|---|---|
|  |  |  |
| <p>◆ Movement of ___ in & out of the lungs.</p> <p>◆ Inhalation: Brings ___ rich air into lungs.</p> <p>◆ Exhalation: Take ___ rich air out of lungs.</p> | <p>◆ Exchange of O₂ & CO₂ between ___ in lungs & bloodstream.</p> | <p>◆ Exchange of O₂ & CO₂ between blood & body's _____.</p> |

EXAMPLE

Match the following descriptions to the appropriate terms below:

| | |
|---|--|
| 1) Gaseous exchange between blood and body tissues. | |
| 2) Movement of air out of the lungs. | |
| 3) Exchange of gases with blood. | |
| 4) Movement of air into and out of the lungs. | |

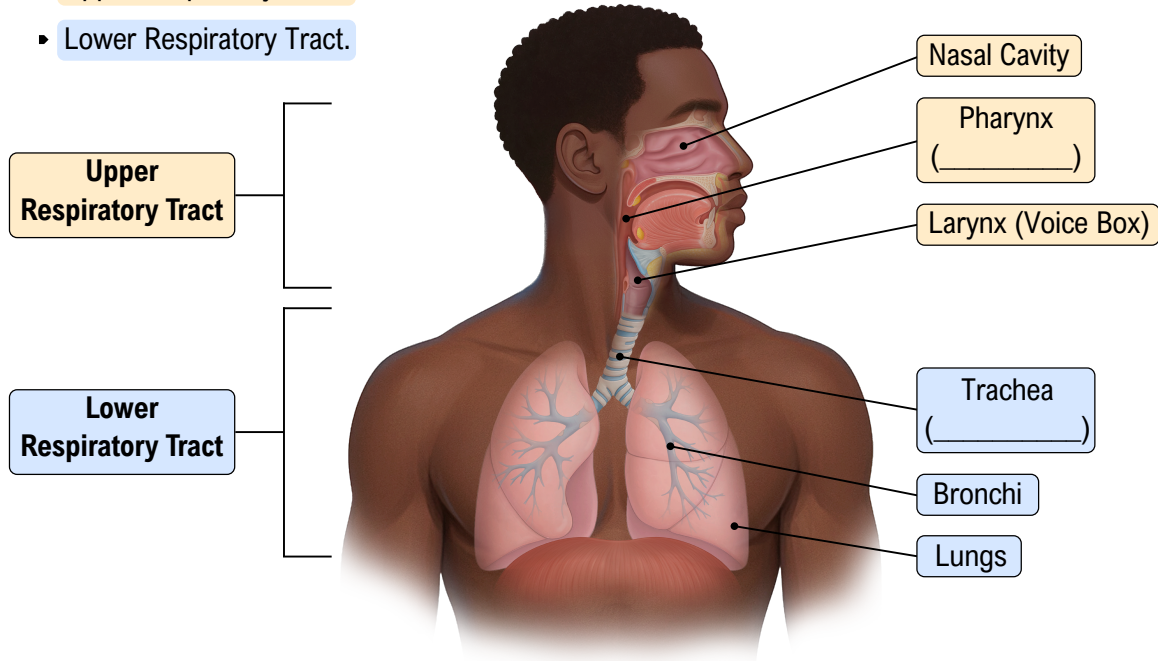
- a) Ventilation
- b) Internal Respiration
- c) External Respiration
- d) Aerobic Respiration
- e) Exhalation

CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Components of the Respiratory System

◆ Respiratory system can be divided into two main parts:

- Upper Respiratory Tract.
- Lower Respiratory Tract.

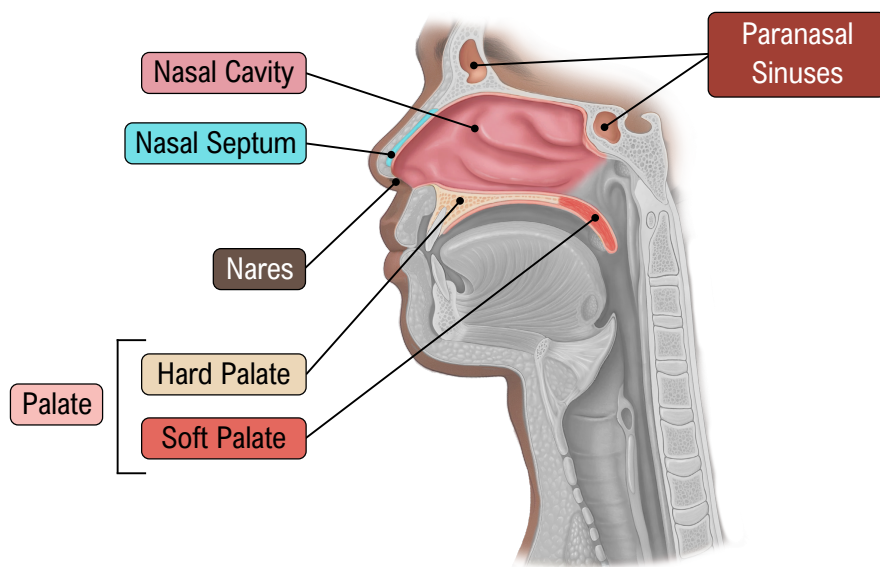


CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Upper Respiratory Tract: Nasal Cavity

1. Nasal Cavity

- ◆ **Nasal Cavity** humidifies & _____ up the air entering the respiratory system.
- ◆ **Nares** (_____): External openings, separated by **nasal septum**.
- ◆ **Palate**: _____ of the mouth, divides nasal and oral cavities.
 - **Hard Palate**: Bony anterior section. ▸ **Soft Palate**: Muscular posterior section.
- ◆ **Paranasal Sinuses**: _____-filled cavities act as echo chambers during sound production.



EXAMPLE

Identify each of the following statements as true (T) or false (F):

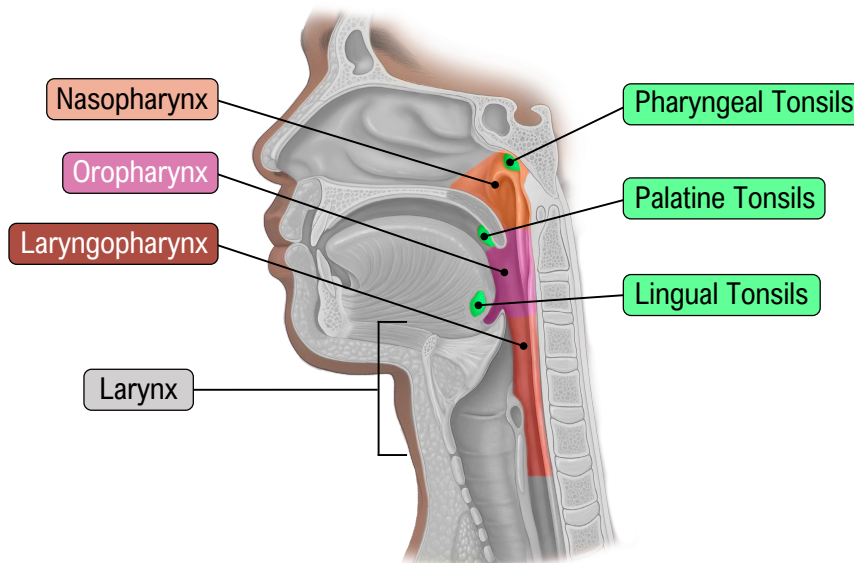
- ____ Paranasal sinuses are fluid-filled cavities that help with sound production.
- ____ The hard palate is the anterior part of the palate that is constructed of bone.
- ____ The nasal cavity humidifies and warms up the air entering the respiratory system.
- ____ The nasal septum separates the nares and diverts air from nasal cavity to oral cavity.

CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Upper Respiratory Tract: Pharynx

2. Pharynx (Throat)

- ◆ Pharynx is used by both respiratory & digestive systems, divided into ___ parts.
 - ▶ **Nasopharynx:** Superior section behind the _____.
 - ▶ **Oropharynx:** Middle section behind the _____.
 - ▶ **Laryngopharynx:** Inferior section behind the **larynx**.
- ◆ **Tonsils:** Collections of lymphatic tissue - keep pathogens from entering through food or air.
 - ▶ Pharyngeal tonsils
 - ▶ Palatine tonsils
 - ▶ Lingual tonsils



EXAMPLE

Which of the following statements about the anatomy of the pharynx is incorrect?

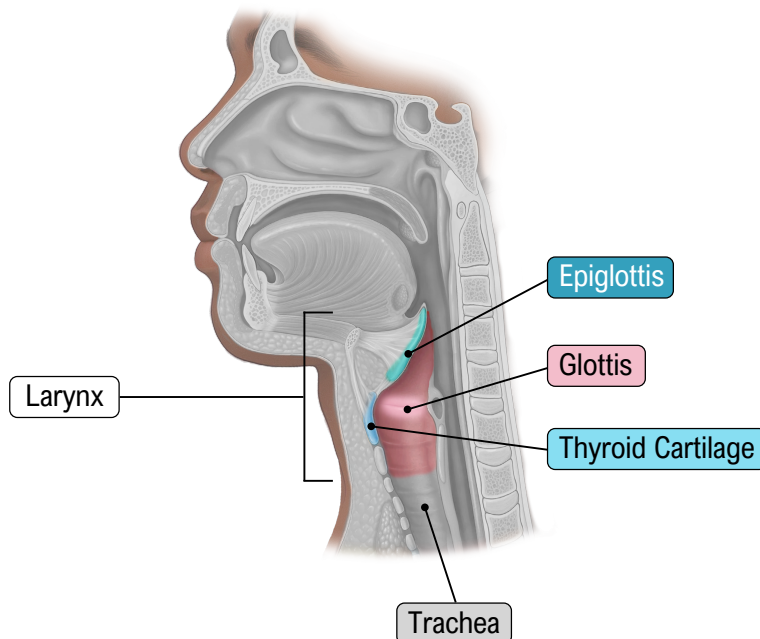
- Pharyngeal tonsils are located in the superior posterior part of the pharynx.
- Lingual tonsils are located at the base of the tongue on the posterior side.
- Pharynx is divided into nasopharynx, oropharynx, and laryngopharynx.
- The inferior part of the pharynx merges with the larynx to become laryngopharynx.

CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Upper Respiratory Tract: Larynx

3. Larynx (Voice Box)

- ◆ Located below the _____ and above the **trachea** (windpipe), contains vocal cords.
- ◆ Composed of several cartilages, **thyroid cartilage** is the largest (forms Adam's apple).
- ◆ Vocal cords vibrate as air passes through the **glottis** (slit-like opening) and produce sound.
- ◆ **Epiglottis**: A flap of _____, at the root of the tongue, covers the larynx, prevents food from entering trachea.



EXAMPLE

Use the words in the word-bank to fill in the blanks and complete the sentences.

Word-Bank: Pharynx Cricoid Thyroid Larynx Epiglottis Cap Trachea Flap Slit Vibrate

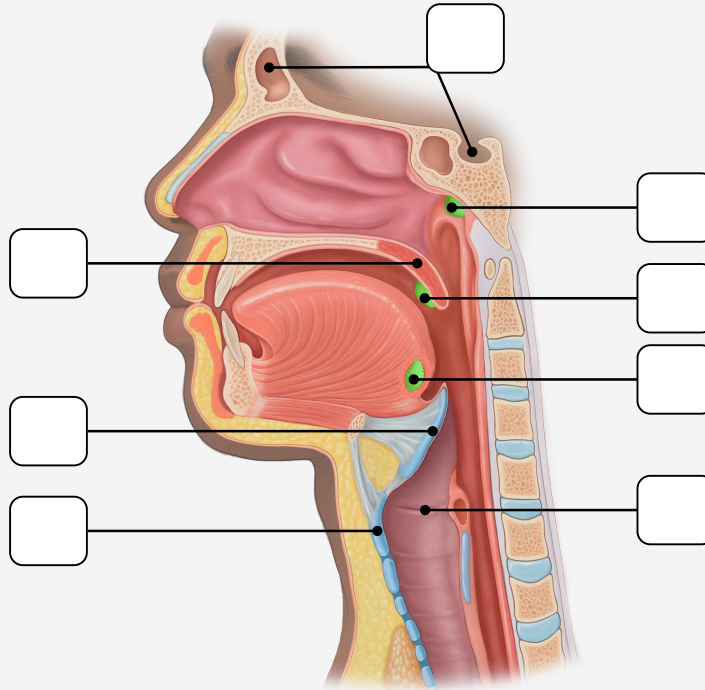
The larynx is made up of several cartilages of which _____ cartilage is the largest. The glottis is a _____-like opening in the larynx and it contains vocal cords which _____ as the air passes through the opening. These vibrations are responsible for the production of sound. Epiglottis is a cartilaginous _____ that makes sure that the food descending down the _____ does not enter the larynx.

CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

PRACTICE

Use the given terms to label the anatomical features in the diagram below.

- a) Lingual tonsils
- b) Glottis
- c) Pharyngeal tonsils
- d) Thyroid cartilage
- e) Soft palate
- f) Epiglottis
- g) Paranasal sinuses
- h) Palatine tonsils

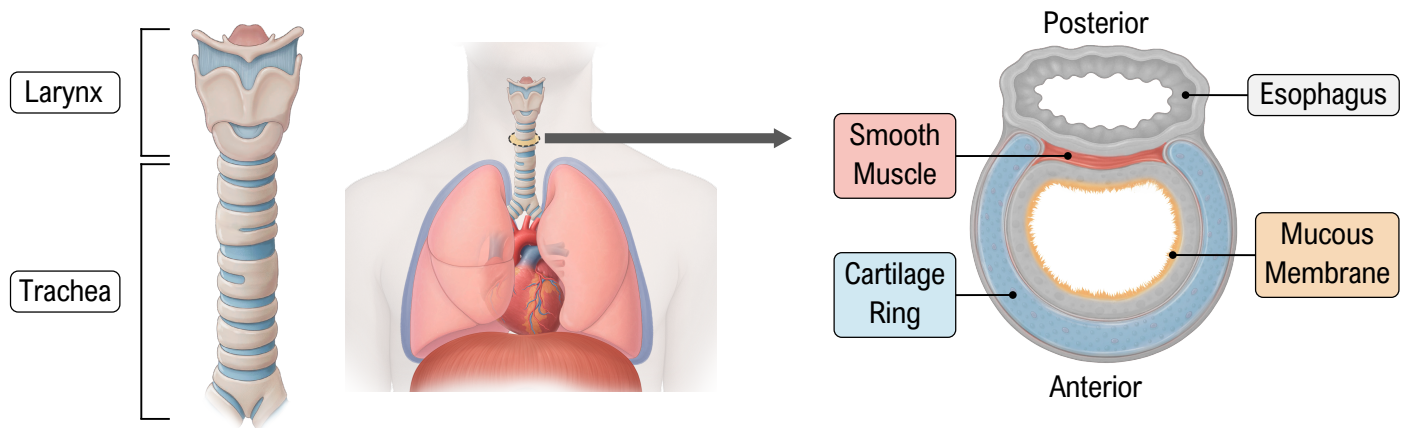


CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Lower Respiratory Tract: Trachea

1. Trachea (Windpipe)

- ◆ **Trachea:** Passageway for air, extends from the larynx to the _____.
- ◆ Cleanses, warms, and moisturizes air as it travels to the lungs.
- ◆ Composed of: Smooth muscle and cartilage rings lined by mucous membrane.



EXAMPLE

Use the words in the word-bank to fill in the blanks and complete the sentences.

Word-Bank: Lungs Mucous Anterior Bronchi Skeletal muscle Cartilage Posterior

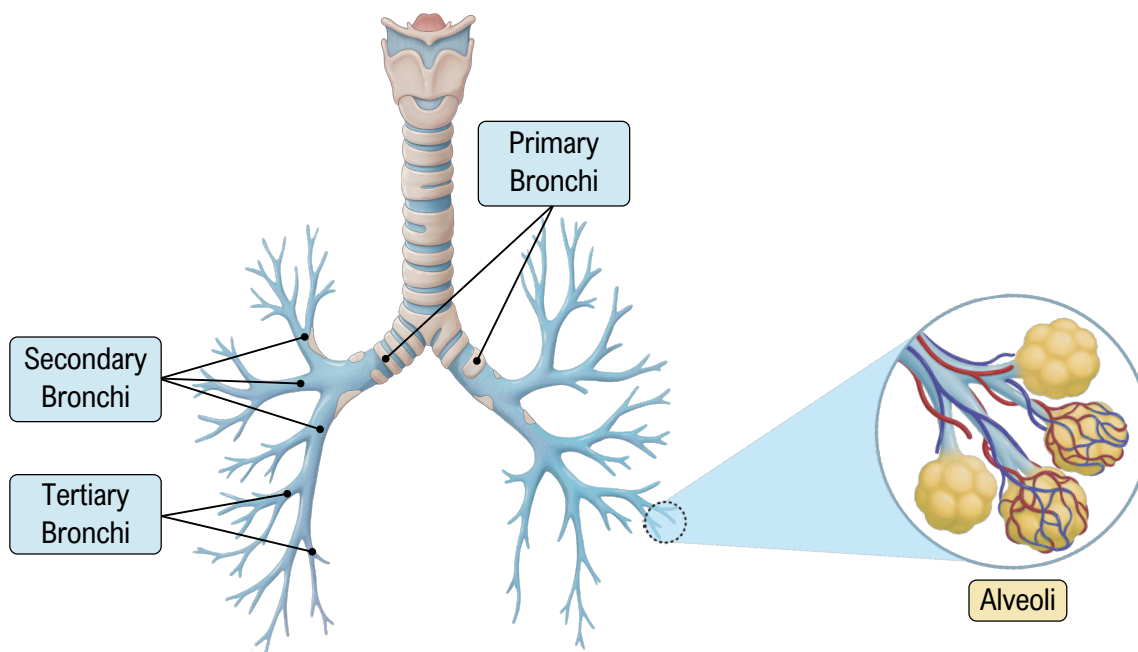
Similar to the nasal cavity, trachea helps to warm up and humidify air before it enters the lungs. The trachea is _____ to esophagus, formed from _____, and bifurcates into _____. The inside of the trachea is lined by a _____ membrane that helps trap dust and other particles and prevents them from entering the lungs.

CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Lower Respiratory Tract: Bronchi

2. Bronchi

- ◆ **Bronchi:** _____ main branches of the trachea at its distal end.
- ◆ Bronchi subdivide into secondary bronchi, tertiary bronchi, and bronchioles.
- ◆ **Alveoli:** Tiny air sacs at the end of bronchioles, tightly encased in _____.



EXAMPLE

Which of the following statements about the lower respiratory tract is incorrect.

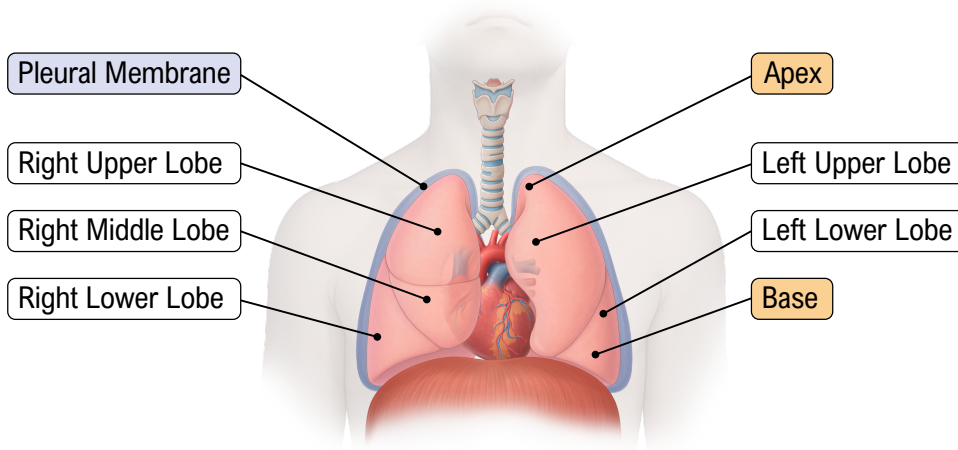
- Bronchioles are the smallest air passageways and lead to alveoli.
- The lower respiratory tract starts below the larynx with the trachea.
- The trachea divides into smaller tubes called the bronchioles.
- Alveoli are tightly wound in capillaries to allow gas exchange with blood.

CONCEPT: OVERVIEW OF THE RESPIRATORY SYSTEM

Lower Respiratory Tract: Lungs

3. Lungs

- ◆ **Lungs:** Conical-shaped spongy organs in the thoracic cavity, enclosed in the _____ membrane.
 - **Pleural Membrane:** Fluid-filled double-walled membrane, reduces friction as lungs expand and contract.
- ◆ Pointed upper part = _____ ◆ Broad lower part = **base**.
- ◆ Right lung has ___ lobes while the left lung has ___ lobes.



EXAMPLE

Which of the following statements is incorrect?

- a) The lungs are encased in the pleural membrane which provides protection and reduces friction.
- b) The left lung is slightly smaller than the right lung because of the space taken up by the heart.
- c) The upper pointed part of a lung is the apex while the broader lower part is called the base.
- d) The right lung has two large lobes while the left lung has three smaller lobes.

PRACTICE

Which of the following statements about the lower respiratory system is incorrect?

- a) The tonsils in the pharynx help to keep pathogens from entering through food or air.
- b) The inside of the trachea is lined by the mucous membrane which can trap inhaled particles.
- c) Bronchioles and alveoli are tightly encased in capillaries to facilitate gas exchange.
- d) The pleural membrane around the lungs is a double-walled fluid-filled membrane.