

## LABORATORY ACTIVITY NO. 12

### THE RESPIRATORY SYSTEM

#### Scope of Laboratory Activity

This laboratory activity consists of three (3) worksheets:

Worksheet no. 1 Respiratory tract

Worksheet no. 2 Spirogram

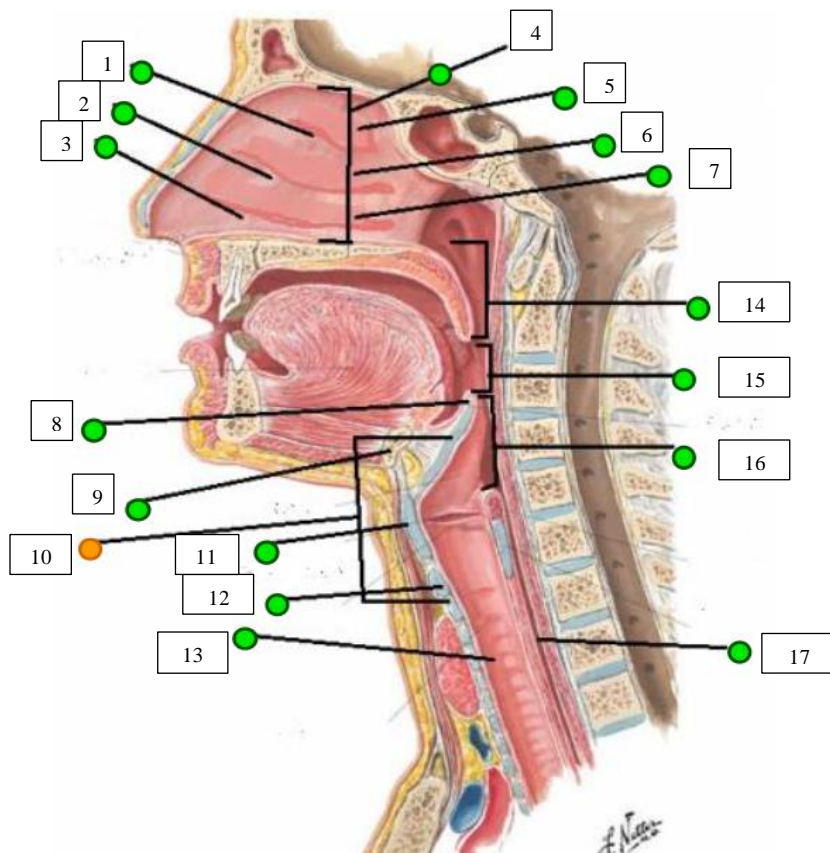
#### Objectives

After completing this laboratory activity, the student will be able to:

1. Identify the gross anatomy of the structures of the respiratory system
2. Identify the histology of the different structures of the respiratory system
3. Identify the basic components (basic lung volumes and capacities) of a spirogram

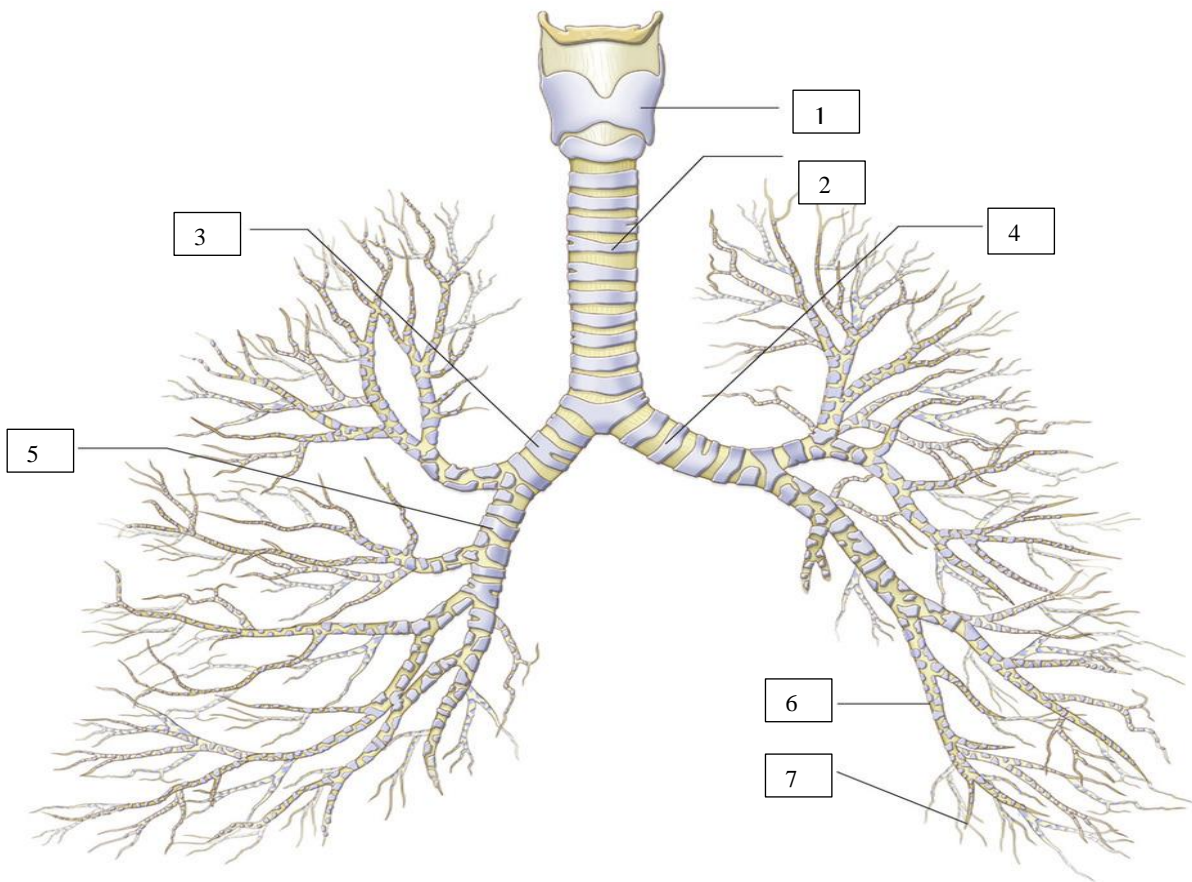
#### Worksheet 1 Respiratory Tract

I. Identify the following structures in this sagittal section of the upper respiratory tract.



- |          |           |           |
|----------|-----------|-----------|
| 1. _____ | 6. _____  | 12. _____ |
| 2. _____ | 7. _____  | 13. _____ |
| 3. _____ | 8. _____  | 14. _____ |
| 4. _____ | 9. _____  | 15. _____ |
| 5. _____ | 10. _____ | 16. _____ |
|          | 11. _____ | 17. _____ |

II. Label the airways in the bronchial tree



Copyright ©2016 Pearson Education, All Rights Reserved

- |          |          |
|----------|----------|
| 1. _____ | 5. _____ |
| 2. _____ | 6. _____ |
| 3. _____ | 7. _____ |
| 4. _____ |          |

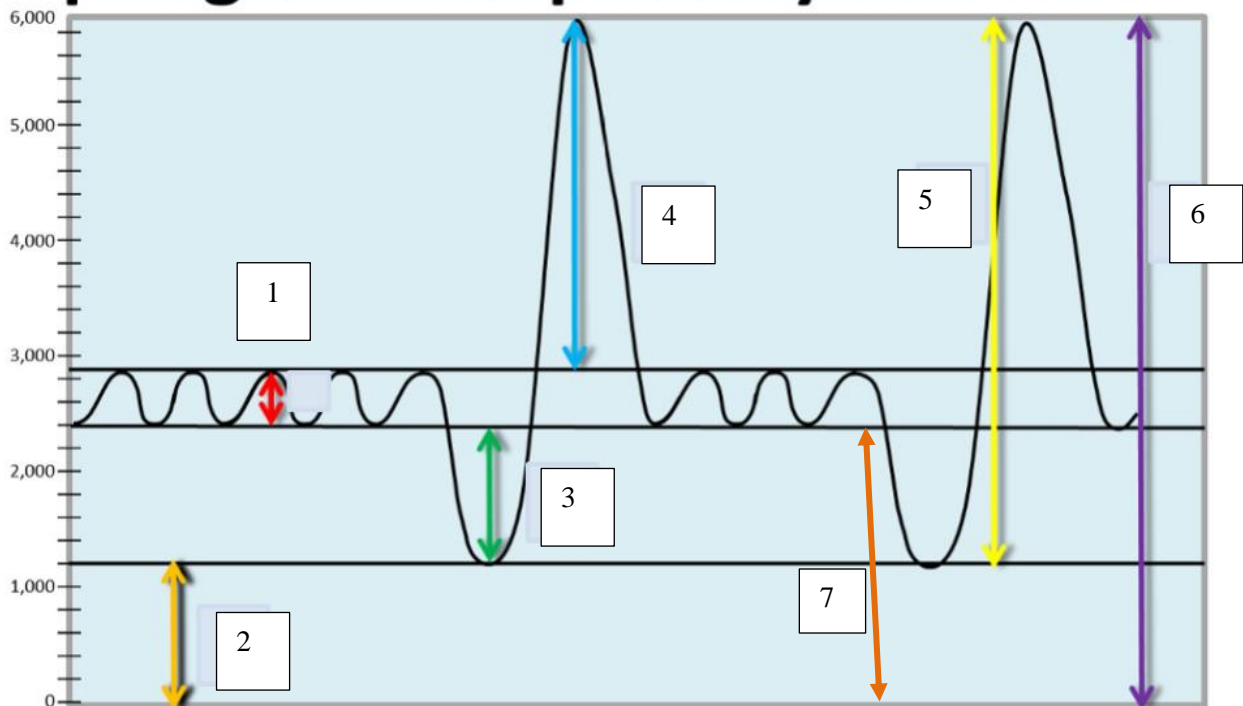
III. Answer the following questions:

1. What are the epithelial linings of the following structures identified in the previous figures:

- a. Nasal cavity: \_\_\_\_\_
- b. Nasopharynx: \_\_\_\_\_
- c. Oropharynx: \_\_\_\_\_
- d. Laryngppharynx: \_\_\_\_\_
- e. Larynx
  - i. Above the vocal cords: \_\_\_\_\_
  - ii. Below the vocal cords: \_\_\_\_\_
- f. Trachea: \_\_\_\_\_
- g. Bronchi: \_\_\_\_\_
- h. Bronchioles: \_\_\_\_\_
- i. Terminal bronchioles: \_\_\_\_\_
- j. Respiratory bronchioles: \_\_\_\_\_

**Worksheet 2: Lung volumes and capacities**

## Spirogram: Respiratory Volumes



This is the spirogram of a 25 year-old male with vital signs of: HR= 80/minute; RR= 15/minute. He has a weight of 75 kg and height of 1.75 m.

I. Identify the lung volume or lung capacity represented in this spirogram

- |          |          |
|----------|----------|
| 1. _____ | 5. _____ |
| 2. _____ | 6. _____ |
| 3. _____ |          |
| 4. _____ | 7. _____ |

II. If given the following values, calculate the following (refer to spirogram above)

Lung volume #1= 500 ml

Lung volume #3= 3000 ml

Lung volume #4= 1100 ml

Lung volume #2= 1200 ml

Calculate for the following:

1. Minute volume: \_\_\_\_\_
2. Total lung capacity: \_\_\_\_\_
3. Inspiratory capacity: \_\_\_\_\_
4. Vital capacity: \_\_\_\_\_
5. Functional residual capacity: \_\_\_\_\_

**References (images)**

1. Fremgen, BF and Frucht SS. (2012). Medical Terminology: A Living Language. 5<sup>th</sup> edition. Pearson.
2. Netter, Frank H. (2014). Atlas of human anatomy. 6th Philadelphia, PA: Saunders/Elsevier.
3. Spirogram from <https://quizlet.com/384307079/spirogram-diagram/> .

