

Breathing Basics



American Respiratory Alliance of Western Pennsylvania

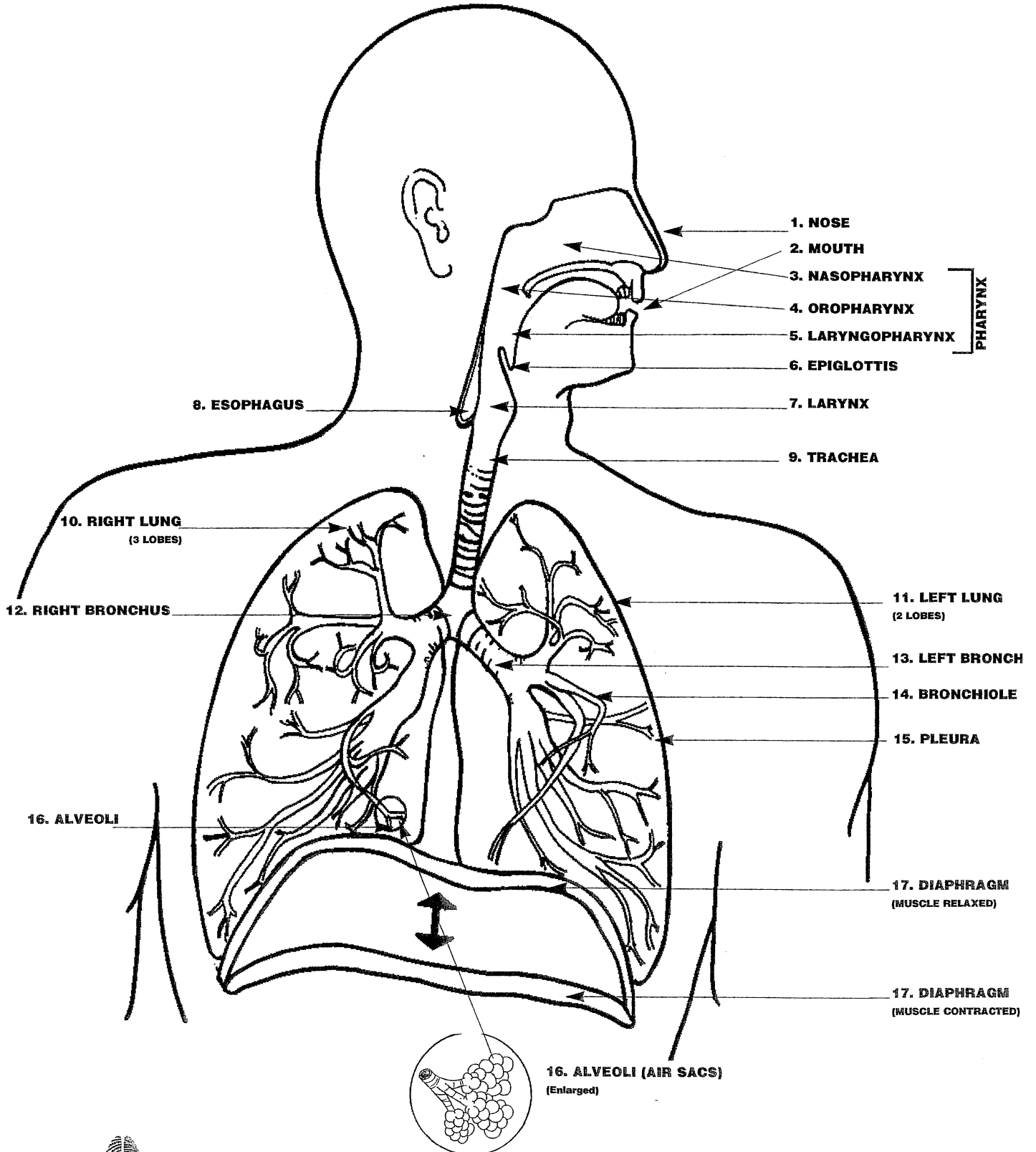
CLASS HANDOUTS

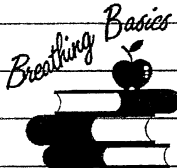
**MASTERS
FOR
DUPLICATION**



THE RESPIRATORY SYSTEM

Diagram and Definitions





American Respiratory Alliance
of Western Pennsylvania

THE RESPIRATORY SYSTEM

Diagram and Definitions

1. The **NOSE** is the specialized structure that serves as an organ of the sense of smell, and as part of the respiratory system, acting as a filter and warmer of inspired air.
2. The **MOUTH** is another entrance for inspired air. However, air inhaled this way is not conditioned as it is through the nose.
3. The **PHARYNX** (throat) is the area between the mouth and nose and the esophagus. The **NASOPHARYNX** is the space above the soft palate to the interior of the nose.
4. The **OROPHARYNX** is the area that lies between the soft palate and the upper edge of the epiglottis.
5. The **LARYNGOPHARYNX** is another part of the pharynx which lies below the upper edge of the epiglottis and opens into the larynx and esophagus.
6. The **EPIGLOTTIS** is the lid-like structure which covers the entrance of the trachea. When closed anything that is swallowed is directed to the esophagus and then to the stomach.
7. The **LARYNX** or "voice box" contains the vocal cords. During speech, air moves passed the vocal cords causing vibration and in turn sound.
8. The **ESOPHAGUS** is the passageway from the mouth and throat to the stomach.
9. The **TRACHEA**, also known as the "windpipe," leads from the pharynx to the lungs.
10. The **RIGHT LUNG** is one of a pair of organs that are responsible for respiration. The right lung is slightly larger and has three lobes (sections): upper, middle, and lower.
11. The **LEFT LUNG** is also responsible for respiration. It is separated from the right lung by the heart and is slightly smaller. The left lung has two lobes (sections): upper and lower.
- 12-13. The **RIGHT and LEFT MAIN BRONCHI** split from the trachea. They branch out to each lobe and continue branching to the smallest of airways— the bronchioles.
Note: The bronchial tubes are lined with **CILIA**, microscopic hairs that beat continuously. Their sweeping motion carries a thin layer of **MUCUS** (a clear, sticky fluid) that traps dirt, debris, and germs, keeping the lungs clean.
14. The **BRONCHIOLES** are the smallest branches of the bronchial tubes.
15. The **PLUERA** is a moist, 2-layer membrane which encloses each lung and lines the chest wall.
16. The **ALVEOLI** are microscopic air sacs where gas exchange occurs through the **CAPILLARIES**, the smallest blood vessels.
17. The **DIAPHRAGM** is the major muscle of respiration. This strong sheet of muscle completely separates the chest cavity from the abdominal cavity. When this muscle contracts, air fills the lungs and when it relaxes, air is exhaled from the lungs.

Note: Although the **RIBS** are not depicted, they are bony structures that define and support the chest cavity and provide protection to the lungs.



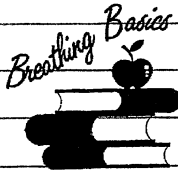
Respi • FACTS

Did you know that...

- 1** The right lung is slightly larger than the left one.
- 2** The hairs in the nose help to clean the air we breathe.
- 3** The highest recorded "sneeze speed" is 102 miles per hour (or 165 kilometers per hour).
- 4** The surface area of the lungs is roughly the same size as a tennis court.
- 5** The smallest bronchiole (airway) has the diameter of the wire of a paper clip.
- 6** We lose half a litre of water a day just by exhaling.
- 7** A person at rest usually breathes between 12-15 times a minute.
- 8** The breathing rate is faster in children and women than in men.
- 9** Thousands of cilia, tiny hair-like structures that line your bronchiole tubes, act like tiny brooms to sweep out the dirt caught in the mucus in your breathing tubes. Each cilium sweeps back and forth about 10 times every second! Do the math to find out how many times one cilium beats to keep your lungs clean:

$$\frac{10 \text{ beats}}{\text{second}} \times \frac{60 \text{ seconds}}{\text{minute}} \times \frac{60 \text{ minutes}}{\text{hour}} \times \frac{24 \text{ hours}}{\text{day}} = \underline{\hspace{2cm}}$$

- 10** You have nearly 600,000,000 alveoli in your lungs. These microscopic air sacs are the place where oxygen and carbon dioxide are exchanged to keep you healthy.

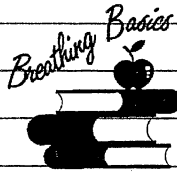


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More interesting Respi•Facts...

Approximate Resting Respiratory Rate (RR) and Heart Rate (HR) of Animals in Relationship to their Body Weight

<u>Weight in Grams</u>	MAMMAL		BIRD	
	<u>RR</u>	<u>HR</u>	<u>RR</u>	<u>HR</u>
3,600,000	4.5	7	(no such animal)	
150,000	10	35	5	27
68,100 (150 LB.)	14	80	7	35
10,000	24	120	10	50
1,000	60	170	16	70
100	150	300	28	150
10	300	450	100	500
2	660	835	250	1200



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THE RESPIRATORY SYSTEM

Word Search Puzzle

Q	W	C	R	T	Y	U	I	L	U	N	G	S	O	P	A	R	S	D	F	K
E	P	I	G	L	O	T	T	I	S	L	Z	X	C	V	B	E	N	M	Q	E
W	E	L	L	R	T	Y	U	I	O	P	A	S	D	D	A	S	T	H	M	A
F	G	I	H	J	T	L	K	V	C	X	Z	B	M	N	B	P	P	O	I	U
D	I	A	P	H	R	A	G	M	Y	T	R	R	E	W	Q	I	L	K	J	H
G	N	B	V	C	A	X	Z	P	O	L	M	O	I	P	K	R	N	U	H	V
Q	F	M	A	P	C	E	Q	A	E	U	H	N	I	N	I	A	B	S	S	W
W	L	N	S	O	H	N	W	L	S	M	T	C	H	E	S	T	E	A	U	T
E	U	B	D	I	E	O	E	V	H	U	D	H	S	U	G	I	R	D	G	G
R	E	V	F	U	A	S	T	E	V	D	S	I	D	M	E	O	G	D	A	V
T	N	X	G	H	D	E	B	O	L	S	A	A	F	O	Y	N	R	H	H	V
Y	Z	V	H	G	W	G	S	L	J	E	J	T	Y	N	U	G	T	T	P	H
U	A	C	R	A	Q	E	D	I	D	E	H	H	J	I	J	R	L	C	O	T
I	A	X	E	I	L	N	F	J	E	H	E	V	K	A	K	D	A	D	S	J
O	S	Z	W	A	H	E	G	Y	O	C	A	P	I	L	L	A	R	I	E	S
A	D	Q	H	W	N	O	H	F	P	O	R	E	W	U	O	X	Y	G	E	N
R	F	N	N	V	J	P	B	S	M	U	C	U	S	Y	X	I	N	I	P	E
U	I	T	B	Y	D	L	V	C	W	G	P	O	Y	W	V	T	X	K	R	E
E	K	B	R	E	A	T	H	E	V	H	N	T	M	B	B	F	J	M	T	Z
L	L	Y	S	N	R	S	J	N	B	M	G	G	N	N	N	G	U	C	A	E
P	Z	T	J	B	V	E	M	P	H	Y	S	E	M	A	M	Y	U	H	K	A

ANATOMY SEARCH

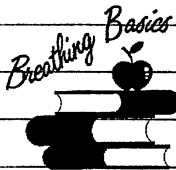
alveoli larynx
 bronchi lobe
 capillaries lungs
 chest mouth
 cilia nose
 diaphragm pleura
 epiglottis ribs
 esophagus trachea

LUNG FUNCTION AND DISEASE SEARCH

breathe asthma
 cough emphysema
 exhale influenza
 inhale pneumonia
 mucus
 oxygen
 respiration



Q	W	C	R	T	Y	U	I	L	U	N	C	S	O	P	A	R	S	D	F	K
E	P	I	C	L	O	T	T	I	S	L	Z	X	C	V	B	E	N	M	Q	E
W	E	L	L	R	T	Y	U	I	O	P	A	S	D	D	A	S	T	H	M	A
F	G	I	H	J	T	L	K	V	C	X	Z	B	M	N	B	P	P	O	I	U
D	L	A	P	H	A	C	H	Y	T	R	R	E	W	Q	L	K	J	H		
G	N	B	V	C	A	X	Z	P	O	L	M	O	I	P	K	R	N	U	H	V
Q	F	M	A	P	C	E	Q	A	E	U	H	N	I	N	I	A	B	S	S	W
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E	U	B	D	I	E	O	E	V	H	U	D	H	S	O	G	I	R	D	S	G
R	E	V	F	U	A	S	T	E	V	D	S	D	N	E	O	G	D	A	V	
T	H	X	G	H	D	E	B	D	E	S	A	A	F	O	Y	N	R	H	H	V
Y	Z	V	H	G	W	G	S	L	J	E	J	T	Y	N	U	G	T	T	P	H
U	A	C	R	A	Q	E	D	I	D	E	H	H	J	J	J	R	L	C	O	T
I	A	X	E	I	N	F	J	E	H	E	V	K	A	K	D	A	D	S	J	
O	S	Z	W	A	H	E	G	Y	O	C	A	P	L	L	A	D	L	E	S	
A	D	Q	H	W	N	O	H	F	P	O	R	E	W	U	C	X	C	E	N	
R	F	N	N	V	J	P	B	S	M	C	U	S	Y	X	I	N	I	P	E	
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E	K	B	R	E	A	T	H	E	V	N	T	M	B	B	F	J	M	T	Z	
L	L	Y	S	N	R	S	J	N	B	M	G	G	N	N	N	G	U	C	A	E
P	Z	T	J	B	V	E	M	P	H	Y	S	E	M	A	N	Y	U	H	K	A



TOBACCO EDUCATION AND PREVENTION

Dot-to-Dot Puzzle

American Respiratory Alliance
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Smokebusters!

Who should you call when second-hand smoke makes you cough and sneeze, and causes watery eyes? Complete the picture by connecting the dots. Start at number 1 and continue to number 115. Finish up the picture by coloring it.

