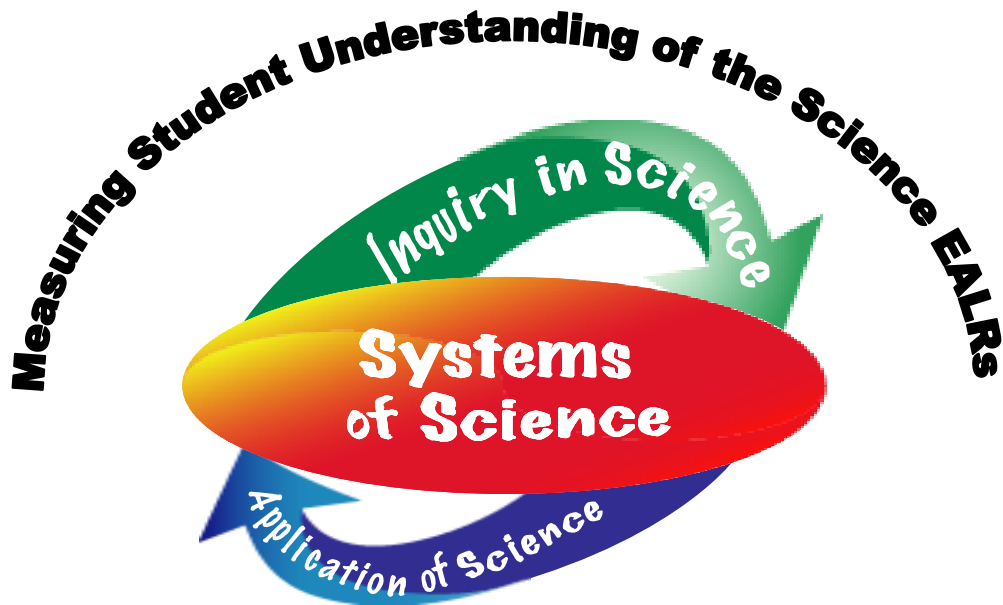


Respiratory System

Middle School
Systems
Powerful Classroom Assessment (PCA)



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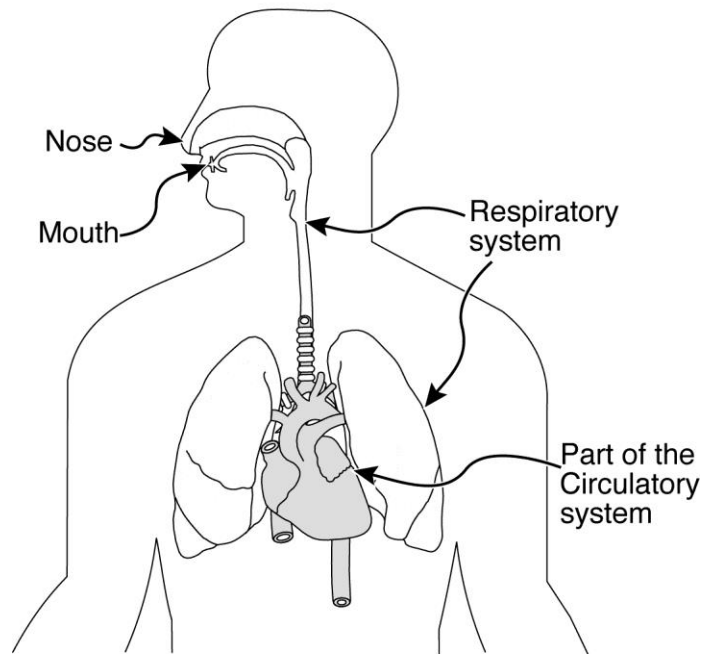


Respiratory System

Directions: Use the following information to answer questions 1 through 9.

Deepak was learning about parts of the respiratory system and their functions. The respiratory system in animals is responsible for the exchange of gases in the body with gases in the air. Many systems in the human body interact with each other. Examples of two such systems are the respiratory and circulatory systems, as diagrammed below.

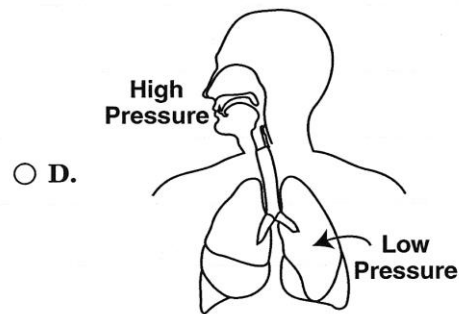
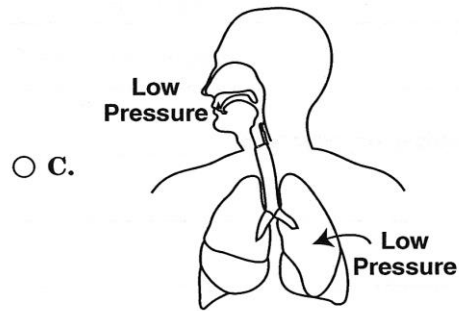
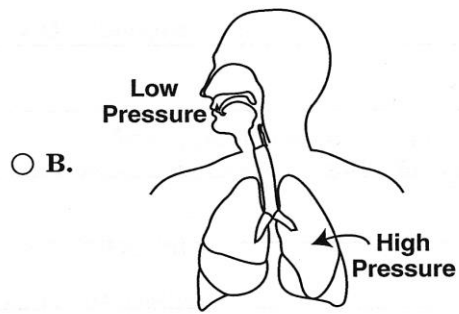
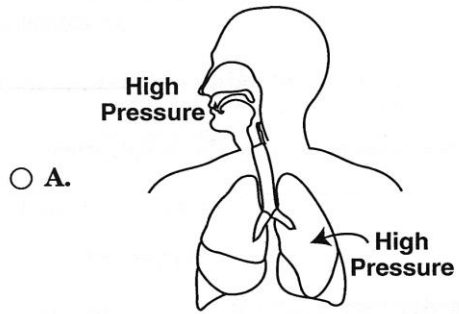
Respiratory and Circulatory Systems



**Inside View
of a Person**

Respiratory System, a Middle School Systems Powerful Classroom Assessment (PCA)

1 Which diagram shows the conditions necessary for air to **enter** the lungs?



Respiratory System, a Middle School Systems Powerful Classroom Assessment (PCA)

- 2 Which of the following changes occurred in the respiratory systems of certain water-dwelling organisms that allowed these organisms to survive on land?
- A. Lungs replaced gills.
 - B. Fins changed into legs.
 - C. Bones replaced cartilage.
 - D. Blood cells changed to carry oxygen.



Respiratory System, a Middle School Systems Powerful Classroom Assessment (PCA)

3 Plants and animals both exchange gases with the environment.

- Describe one way the process of gas exchange in plants is **similar** to the process of gas exchange in animals.
- Describe one way the process of gas exchange in plants is **different** from the process of gas exchange in animals.

Similarity:
Difference:



Respiratory System, a Middle School Systems Powerful Classroom Assessment (PCA)

- 4 While hiking on Mount Rainier, Deepak found that as he climbed higher up the mountain, he had to take deeper breaths. Which reason explains why these deeper breaths were needed?
- A. As Deepak climbed higher, an increase in air pressure made his lungs smaller.
 - B. Oxygen molecules in the air are spread farther apart as altitude increases.
 - C. As Deepak climbed higher, carbon dioxide in the air increased.
 - D. The heart beats slower at higher altitudes than at low altitudes.
- 5 In order for oxygen to get to muscle cells, the respiratory system must interact with which of these human body systems?
- A. Skeletal
 - B. Digestive
 - C. Circulatory
 - D. Reproductive



Respiratory System, a Middle School Systems Powerful Classroom Assessment (PCA)

6 Describe **two** human body systems that affect how the respiratory system functions.

In your description, be sure to:

- Identify **two** human body systems that affect the respiratory system.
- Describe how **each** of the **two** systems affects the respiratory system.

One system:
How this system affects the respiratory system:
Another system:
How this system affects the respiratory system:



Respiratory System, a Middle School Systems Powerful Classroom Assessment (PCA)

- 7 In a classroom activity, Deepak’s science class investigated the amount of air they could hold in their lungs by blowing up balloons and measuring the volume. The results of the investigation are shown in the table below.

Student Height (centimeters)	Lung Capacity (liters)			
	Trial 1	Trial 2	Trial 3	Average
130	2.77	2.40	2.48	2.55
150	3.70	3.59	3.55	3.62
170	5.45	5.61	5.35	5.49

Which of the following is a summary that could be made directly from the data in this investigation?

- A. All students that are 170 cm tall can hold 5.49 liters of air in their lungs.
 - B. The taller a student is, the more air they can hold in their lungs.
 - C. The older a student is, the higher lung capacity they have.
 - D. The harder a student blows, the more air they can hold.
- 8 Asthma is a condition that affects a person’s ability to breathe. Which statement explains why people with asthma today are able to participate in physical activities they were not able to in the past?
- A. The activity level of individuals with asthma is less than in the past.
 - B. The human body has become resistant to asthma.
 - C. Medicines have been developed to treat asthma.
 - D. Asthma has been cured in the United States.
- 9 Deepak learned that the respiratory system can be harmed by breathing in dust and smoke from the air. What is the best way Deepak could reduce the dust and smoke he breathes in at his home?
- A. Seal all the doors and window of his house with tape
 - B. Spray the air in his house with air freshener
 - C. Use fans to circulate the air in his house
 - D. Filter the air coming into his house

