

Science

The Respiratory System

The lungs are part of the respiratory system. They are found in the chest and are surrounded by _____ which work to protect the lungs from damage. The diaphragm is a _____ under the lungs that helps us breathe.

When we breathe in, we take in oxygen from the air. This is carried from the nose or mouth down the _____ and bronchi into the bronchioles. The _____ then diffuse oxygen during a process called _____ into the blood carried in the _____. This blood is then carried around the body where it can be used for _____ in the cells. At the same time in the lungs, carbon dioxide which is one of the _____ of respiration, is removed from the blood into the alveoli and then breathed out of the lungs.

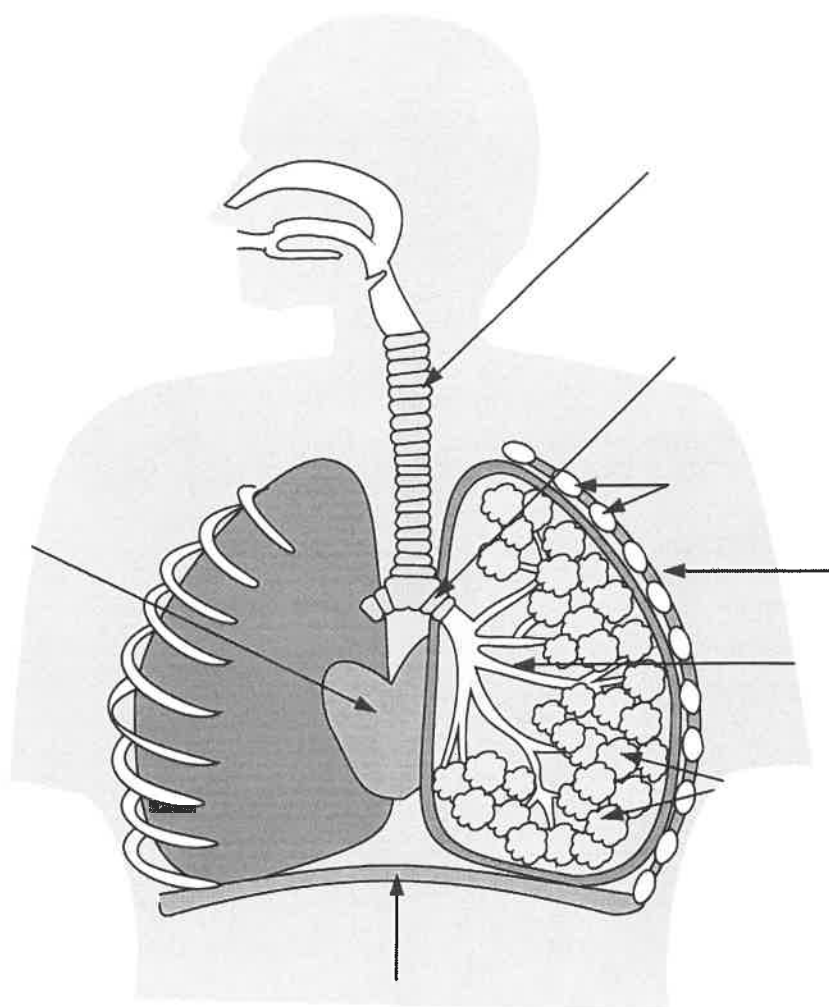
Missing Words

sheet of muscle	trachea	respiration	gas exchange
capillaries	alveoli	waste products	ribs

Can you crack the code to find out which part of the lungs we are going to look at in more detail next lesson?

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
2	2	2	6	3	1	4	4	8	7	1	4	8	2	9	1	5	1	4	9	3	1	1	8	1	5
6		3		9	6	5	2		2	9		1	4		6			6	0		4	9	8	7	

13 x 2	3 + 1	7 x 2	32 + 7	3 x 3	12 ÷ 3	11 - 3



PULSE RATE

Complete the passage below using the words listed below.

During each heartbeat, the muscles of the _____ contract which pumps blood through the heart and out into the arteries. This wave of pressure in an artery is known as a _____. There is one pulsation for each _____. The pulse can be felt at various points on the body where the _____ are just under the skin, such as the temples, neck, crook of the elbow, wrist, back of the knee, and the inside back of the ankle.

The _____ pulse rate varies with age. With exercise or _____ activity, the heart rate increases to supply the muscles with more oxygen to produce extra energy. The heart can beat up to _____ times per minute with extreme exercise. The brain sends _____ signals to the heart to control the rate. The body also produces chemical _____, such as adrenaline, which can change the heart rate. When we are _____, scared, or anxious our heart gets a signal to beat faster.

During a _____, the heart beats faster to bring more blood to the surface of the body to release heat and _____ the body. The heart rate _____ during and after a meal to send more blood to the digestive system. A trained athlete's heart can pump more blood with each beat so his or her heart rate is _____.

nerve
heartbeat
increases

hormones
200
physical

heart
slower
arteries

excited
pulse

cool
fever

normal

Range of Heart Rates per Minute and Average Heart Rate for Various Ages

<i>Age</i>	<i>Range</i>	<i>Average Rate</i>
0-1 month	100-180	
2-3 months	110-180	
4-12 months	80-180	
1-3 years	80-160	(130)
4-5 years	80-120	(100)
6-8 years	70-115	(100)
9-11 years	60-110	(88)
12-16 years	60-110	(80)
> 16 years	50-90	(70)

Just what is a Pulse rate?

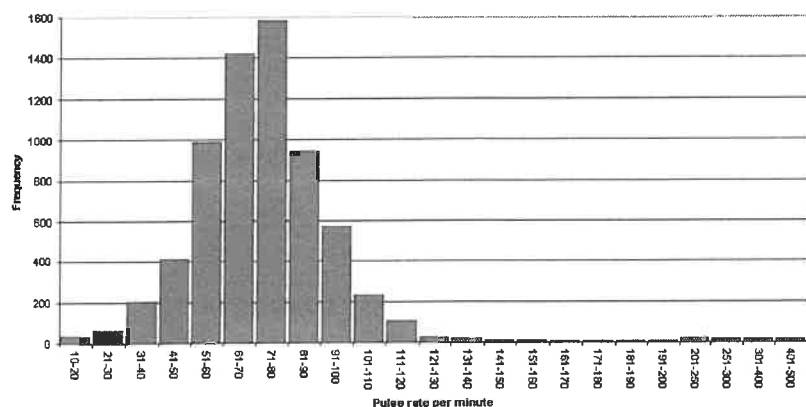
Pulse rate shows how fast your heart is beating. It is usually given as the number of beats in one minute. It varies for different people -



For 7-16 year olds a normal resting pulse rate is between 75 and 100. It varies according to your age, level of fitness and how active you are being.

- Here are some pulse rates taken from the CensusAtSchool database. Have a careful look at the graph. Write a few sentences describing the graph. Is this what you would expect? Try and explain what you have noticed.

Pulse Rates of 6700 Children aged 7 to 16.
Data from Phase 3 CensusAtSchool



(Extension - The mean of this data is 75.32, the mode 72 and the median 72. Can you explain why the mean is higher than the other two measures of average?)

- Look at the following pulse rates. What do you notice? Can you think why there are differences between the species?

Type of Animal	Normal Pulse Rate
Horse	32 - 44

Dog	60 - 120
Sheep	70 - 80
7-16 year old	75 - 100
Mouse	450 - 550
Elephant	20 - 30
New born baby	130 - 140

3. Which three activities below would make your pulse rate go up?

Sleeping

Watching TV

Cycling

Running

Reading

Swimming

Explain why your pulse would go up.

4.

- Find your pulse. Count the number of heartbeats in 30 seconds. Enter the in the table below.
- Multiply by 2 to get your pulse rate - the of beats per minute. Enter this in the table.
- Multiply by 60 to get the number of heartbeats in one hour.
- Complete the rest of the table.
- The average lifespan for a mouse is 3 years. the data in Q2 work out how many times a heart beats in its lifetime.
- Repeat for a different animal. What do you notice?

Time period	Number of heartbeats
30 seconds	
1 minute	
1 hour	
1 day	
1 year	
Average lifetime (80 years)	

number

number

Using mouse's

For more interesting facts about pulse rate and blood generally go to:

http://www.questacon.edu.au/html/assets/pdf/The_Circulatory_System.pdf

http://www.medindia.net/patients/calculators/pulse_chart.asp

