Respiratory and Circulatory Systems

- Nasal passage
- Oral cavity
- Pharynx
- Larynx
- Trachea
- Bronchi
- Lung
- Heart
- Ribs
Respiratory System:

1. Define the following:
   - **Cellular Respiration** - Oxygen & glucose combine to make ATP (in mitochondria)
   - **Human Respiration** - “Breathing” the exchange of gasses (O2 in/CO2 out)
Respiratory System:

2. Give a brief description of each of the following - how do they maintain homeostasis / do their job:

Nasal Cavity - Filters, Warms, & Moistens
Air enters here, Lined with tiny hairs / cilia

Pharynx – Throat, Tube at the back of the mouth
Receives air from nasal cavity, Pathway for food & air

Larynx - Voice box Contains vocal cords
Air passes through causing sound producing vibrations
Respiratory System:

- **Trachea** - Windpipe - Receives air from pharynx, Passes air into bronchi
- **Bronchi** - passageways from the trachea lead to each lung
- **Bronchioles** - Smaller branches off the bronchi in both lungs, Tiny air passages leading to the alveoli
- **Alveoli** - air sacs - One cell thick! where gas exchange happens/surrounded by capillaries
Respiratory System:

Explain the role of the diaphragm in the process of breathing. Be sure to mention what is happening to the diaphragm when the lungs become inflated and when they become deflated.

**Inhalation:**
Diaphragm contracts, down - pressure Reduced, **AIR IN**

**Exhalation:**
Diaphragm relaxes, up - pressure Increases, **AIR OUT**
Lab Component:

20. Why might an athlete have a larger lung capacity than a non-athlete?

Exercising Requires More (Oxygen Expanding lungs More)
Lab Component:

21. What does pulse rate measure?
   - how fast the heart is beating

   • What does an increase in pulse rate indicate about heart rate and blood flow?
     – Heart is beating faster
     – The blood flow is increased
22. When you measure your pulse, what blood vessel are you monitoring?

Artery
Lab Component:

23. Explain what would happen to your pulse rate before, during, and after exercising.

正常的 增长 返回到正常
24. Why does a muscle become fatigued?

- Shortage of ATP, H2O, O2, & glucose
- Build up of CO2
Lab Component:

25. As you exercise what gas content increases in your bloodstream?

- CO2

- Why?
  - Demand by cells for energy needs
  - Cellular Respiration (when you make ATP, CO2 is the waste gas)
Lab Component:

26. Explain how the circulatory system and the respiratory system work together to maintain homeostasis.

Respiratory System takes in the needed O2
Circulatory System transports it and other substances to the cells for
Cellular Respiration
Lab Component:

27. If you want to increase your clothespin-squeezing rate, would you suggest exercising or resting before?

Exercising before
Explanation: get blood pumping to bring nutrients & O2

OR

Resting before
Explanation: store energy in cells for immediate use and avoid CO2 buildup
Lab Component:

28.

Which statement best describes a change that usually takes place in the human body when the heart rate increases as a result of exercise?

(1) More oxygen is delivered to muscle cells.
(2) Blood cells are excreted at a faster rate.
(3) The rate of digestion increases.
(4) No hormones are produced.
Lab Component:

29.

Which statement best describes a controlled experiment?

(1) It eliminates the need for dependent variables.

(2) It shows the effect of a dependent variable on an independent variable.

(3) It avoids the use of variables.

(4) It tests the effect of a single independent variable.
Lab Component:

Two students collected data on their pulse rates while performing different activities. Their average results are shown in the data table below.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Average Pulse Rate (beats/min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sitting quietly</td>
<td>70</td>
</tr>
<tr>
<td>walking</td>
<td>98</td>
</tr>
<tr>
<td>running</td>
<td>120</td>
</tr>
</tbody>
</table>

State one way that this investigation could be improved. [1] Repeat using more subjects. Repeat longer or varied exercises.

30.

31.

State the relationship between activity and pulse rate. [1]

an increase in activity results in an increase in pulse rate.
Lab Component:

A student squeezes and releases a clothespin as often as possible for 2 minutes and then takes his pulse for 20 seconds. After a 2-minute rest, he repeats the procedure. This pattern is repeated one more time. The student’s 20-second pulse counts were 23, 26, and 21.

Complete the “Pulse/Min” column in the data table below for all three trials as well as the average pulse rate per minute. [1]

<table>
<thead>
<tr>
<th>Trial</th>
<th>20-Second Pulse Counts</th>
<th>Pulse/Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>23</td>
<td>69</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>78</td>
</tr>
<tr>
<td>3</td>
<td>21</td>
<td>63</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>70</td>
</tr>
</tbody>
</table>
What additional data should the student have collected in order to determine the effect of squeezing a clothespin on his pulse rate? [1]

A resting pulse rate as a control for comparison
404 Oh nooooo
KIA This was on the review sheet!!

TG2BT
This is easy
Guess it’s because I studied.

IDK may be I shouldn’t have copied my review sheet

I 1 D-R if this is easy Cuz I studied