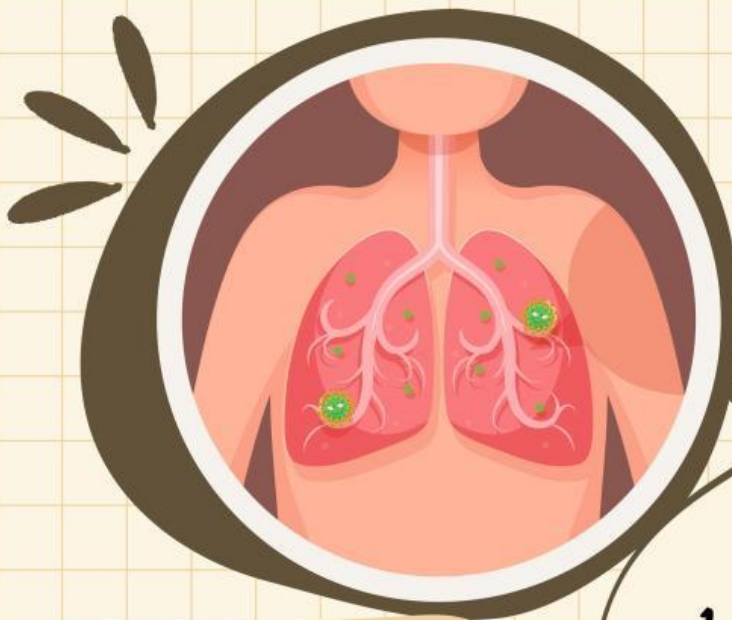


# RESPIRATORY SYSTEM (HUMAN RESPIRATORY FREQUENCY)

## SCIENCE STUDENT WORKSHEET



By:  
Brigita  
Berlian P

CLASS :

NAME  
of Group:

- 1.
- 2.
- 3.
- 4.

CLASS VIII  
EVEN SEMESTER



# Introduction

**Science Student Worksheets based on socio scientific issues, problem based learning, competence, flexible learning, and pancasila characters on Human Respiratory System material Human Respiratory Frequency sub material for grade VIII even semester Junior High School / MTs Students.**

**For natural science (Science) subjects with Human Respiratory System material Human Respiratory Frequency sub-material Junior High School/MTs class VIII even semester Independent Learning Curriculum.**

**Compiler : Brigita Berlian Permatasari**  
**Design : Brigita Berlian Permatasari**  
**Size : 21 x 29,7 (A4)**  
**Year : 2023**



# Foreword



We give thanks to God Almighty, who has bestowed his mercy and grace so that the author is able to complete Student Worksheets based on socio scientific issues, problem based learning, competence, flexible learning, and pancasila characters in the material of the Human Respiratory System class VIII even semester well. Do not forget to thank all parties who have helped in completing the making of this science worksheet. This Student Worksheet is prepared using the basis of Socio Scientific Issues (SSI), Problem Based Learning (PBL), competence, flexible learning, and pancasila character referring to the Independent Learning Curriculum which presents valuable learning for students in order to apply science to social life and improve students reasoning abilities, so that the expected learning objectives can be achieved properly.

The author realizes that in the preparation of this science worksheet there are still many shortcomings and errors criticism and suggestions are always expected for the improvement of this science worksheet. Finally, the author hopes that science worksheet based on Socio Scientific Issues (SSI), Problem Based Learning (PBL), competence, flexible learning, and pancasila characters in the Human Respiratory System material can be useful and help students and teachers so that a good learning process occurs.

**Compiler**

A handwritten signature in black ink. The signature is stylized and appears to read 'Brigita Berlian P.' with a large 'B' and 'P.' visible.

**Brigita Berlian P**

# LKPD Instructions

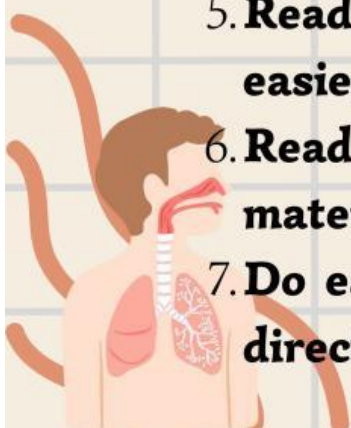


## A. Instruction for Teachers

1. The teacher leads the prayer before working on the science worksheet.
2. Before using this science worksheet, teachers divided students into heterogeneous groups consisting of 3-4 people.
3. The teacher directs students to learn science worksheet independently both at home and outside class hours to deepen their understanding of the human respiratory system material.
4. Before working on science worksheet, teachers provide opportunities for students to ask questions related to things that are not understood.

## B. Instruction for Students

1. Students pray before working on science worksheet.
2. Students sit in groups according to their groups.
3. Students pay attention to the directions given by the teacher regarding the use of science worksheet.
4. Students ask something that is not yet understood about science worksheet work.
5. Read the study instructions carefully to make it easier to use this science worksheet.
6. Read other learning resources related to the material in science worksheet to add insight.
7. Do each activity according to the instructions and directions on the science worksheet.



# Learning Achievements



**Element: Understanding Science**

**Achievement of Learning Objectives:** Students can describe atoms and compounds as the smallest units of matter and cells as the smallest units of living things, identify the organizational system of life and conduct analysis to find the relationship of organ systems with their functions and abnormalities or disorders that arise in certain organ systems (digestive system, circulatory system, respiratory system and reproductive system).

**Achievement of Learning Objectives Each Selected Element:** An understanding of life organization systems and organ systems. Students are able to conduct analysis to find the relationship between organ systems and their functions as well as abnormalities and disorders that arise in certain organ systems (digestive system, circulatory system, respiratory system, and reproductive system).

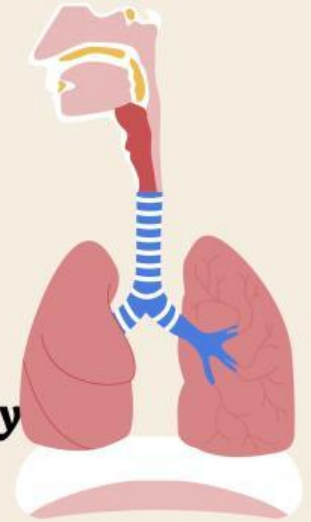
## Learning Objectives

Students are able to analyze the working mechanisms of the respiratory organ system, volume, frequency and capacity of respiratory air, diseases, symptoms and disorders of the respiratory system and their efforts.



# ACTIVITY 1

## Approach, Problem Analysis, and Practicum



### Practicum Title

**Influence Factors on Respiratory Frequency**

### Practical Purposes

1. Through practicum, students are able to prove the factors that influence respiratory frequency correctly.
2. Through practicum, students are able to present the results of practicum on factors that influence respiratory frequency through presentations with discipline and full responsibility.

### Come On, Pay Attention !



Picture 1. A man ran  
(Source: Bold, 2020)

Rendy in the morning before doing his activities, he diligently does exercise in the morning to keep his body healthy. Apart from the cool air, the body is also still fresh for exercising. When Rendy was exercising, he circled the field 5 times. He felt that his heart was beating faster and faster from the first round to the next round. After stopping, he then took a deep breath and exhaled. Why did it happen?

## *What Did You Find?*

**Based on the phenomenon above, write down the important information you find!**



## *Let's Formulate The Problem !*

**Write a problem or question formulation based on the Rendy phenomenon above which refers to the practicum objectives!**



## Proposing a Hypothesis



**Make a hypothesis or temporary answer from each problem formulation that you have created!**

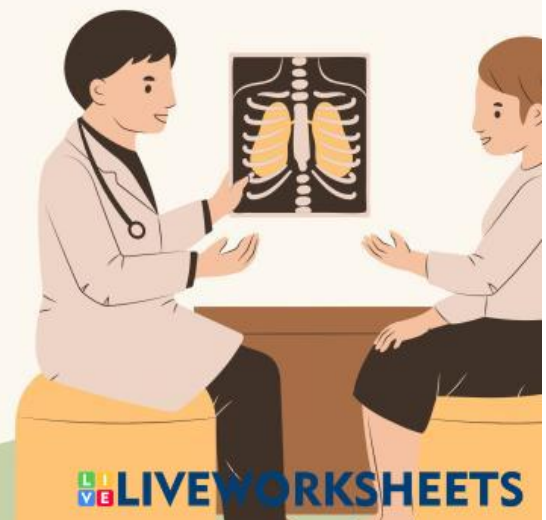
**The hypothesis you make is based on the knowledge you have about the factors that influence respiratory frequency.**

## Let's Design and Experiment!

**Design an experiment to prove your hypothesis with the tools and materials provided with a note that you can do at least 3 types of activities!**

**Tools and Materials:**

- |                    |         |
|--------------------|---------|
| 1. Stopwatch       | 1 piece |
| 2. Paper/Notebook  | 1 piece |
| 3. Bolpoint        | 1 piece |
| 4. Voice recording | 4 piece |



## ***Determine The Activity!***

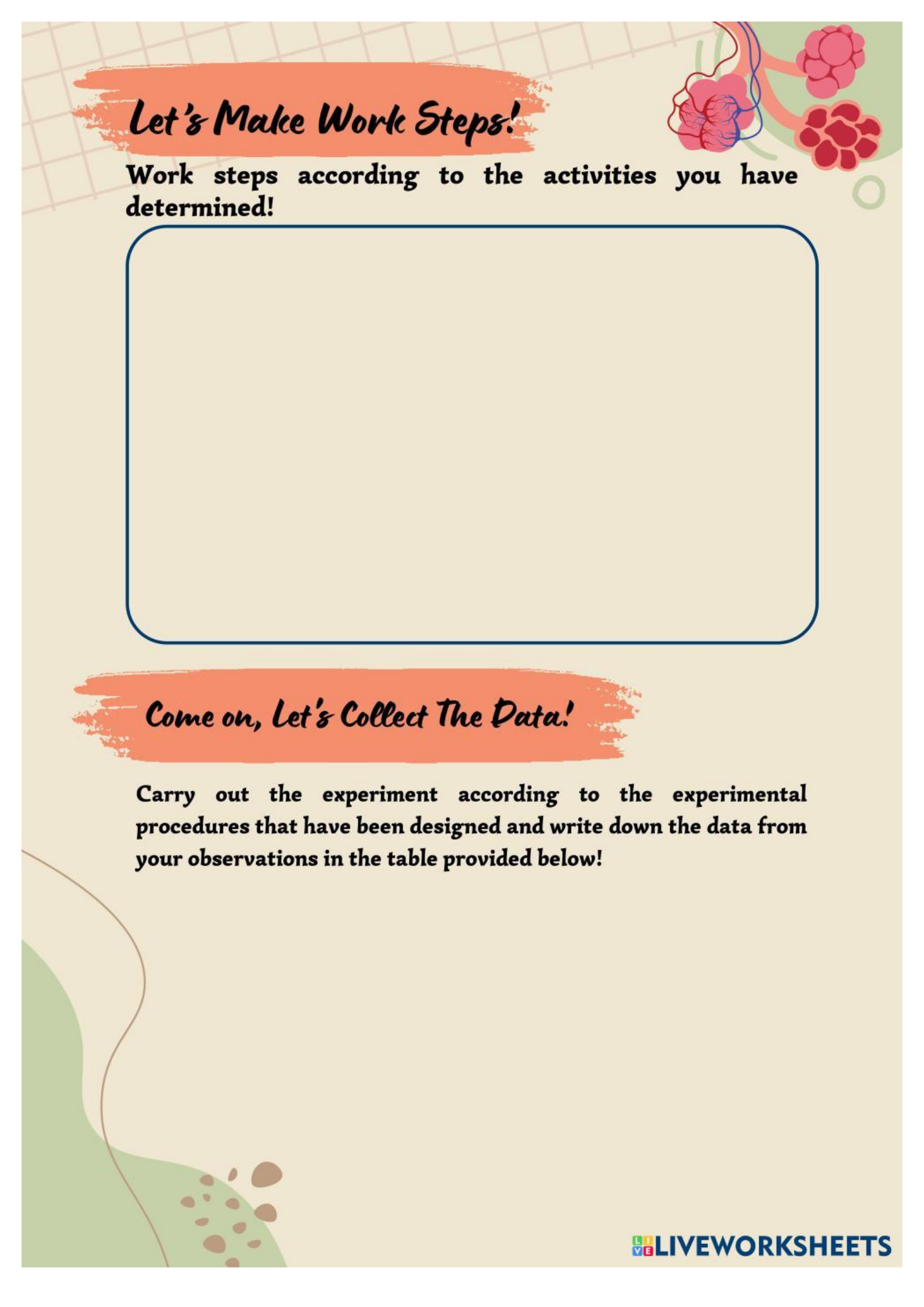
**Write down activities that you have determined with the group!**



## ***Define The Variables!***

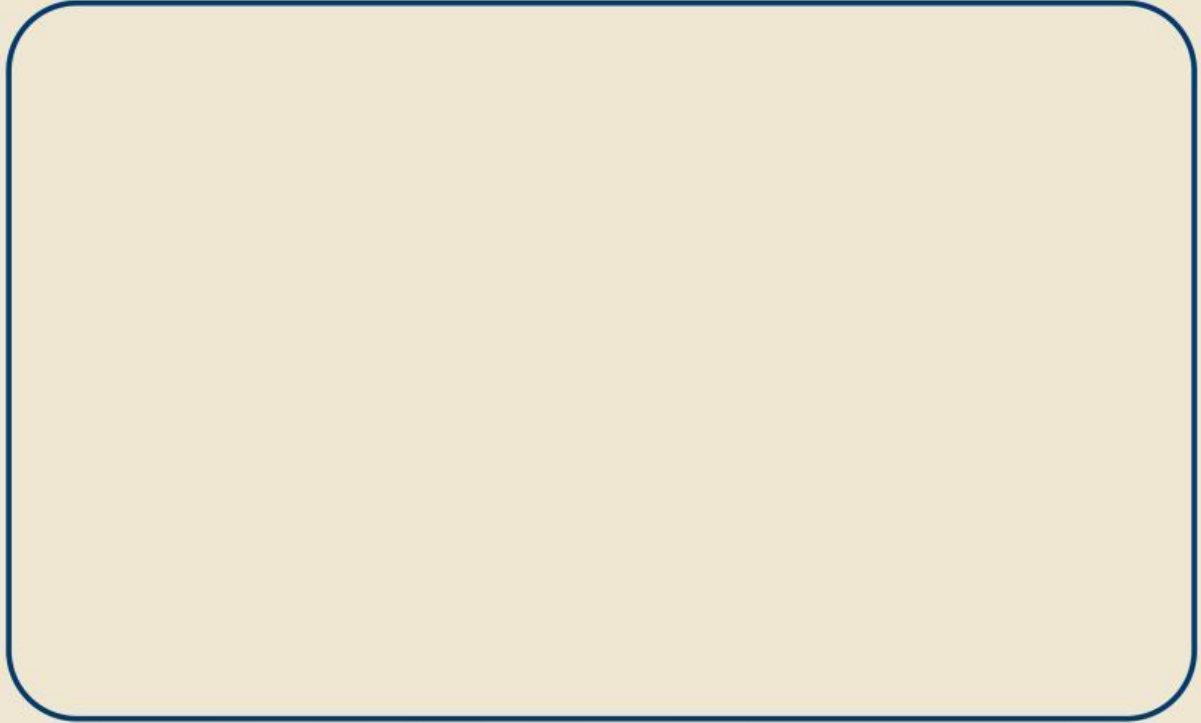
**Create variables related to the activities to be carried out!**





## *Let's Make Work Steps!*

**Work steps according to the activities you have determined!**



## *Come on, Let's Collect The Data!*

**Carry out the experiment according to the experimental procedures that have been designed and write down the data from your observations in the table provided below!**

## ACTIVITY 2

### Data Analysis



## Let's Process Data !

Based on the experimental data in the table above, determine whether the data obtained in the experiment is in accordance with the results of the learning carried out!

## Interpretation of Data Analysis

### Results and Discussion

1. Based on the activities you have done, which activity has the highest respiratory frequency? Why is that?



A large, empty rectangular box with rounded corners and a dark blue border, intended for a student's answer to the first question.

**2. What factors influence respiratory frequency in humans? Explain.**

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**3. Based on the activities you have done, what do you know about respiratory frequency?**

A large, empty rectangular box with rounded corners and a dark blue border, intended for a student's answer to the third question.





## ACTIVITY 3 Enrichment



### *Let's Practice!*

**Pay attention to the case below!**

**In a densely populated metropolitan city, there is an increasing trend in respiratory problems. Many residents reported symptoms of shortness of breath, persistent cough and increased levels of fatigue. A public health study was conducted to investigate the causes and find effective solutions (Nuraini, 2019).**

**Question:**

- 1. How can we measure and monitor the respiratory frequency of city residents to detect changes in health early?**
- 2. How can public education help in preventing respiratory problems and managing a healthy respiratory rate?**
- 3. Are there environmental policies or public health interventions that can be implemented to reduce the negative impact on the respiratory frequency of city residents?**

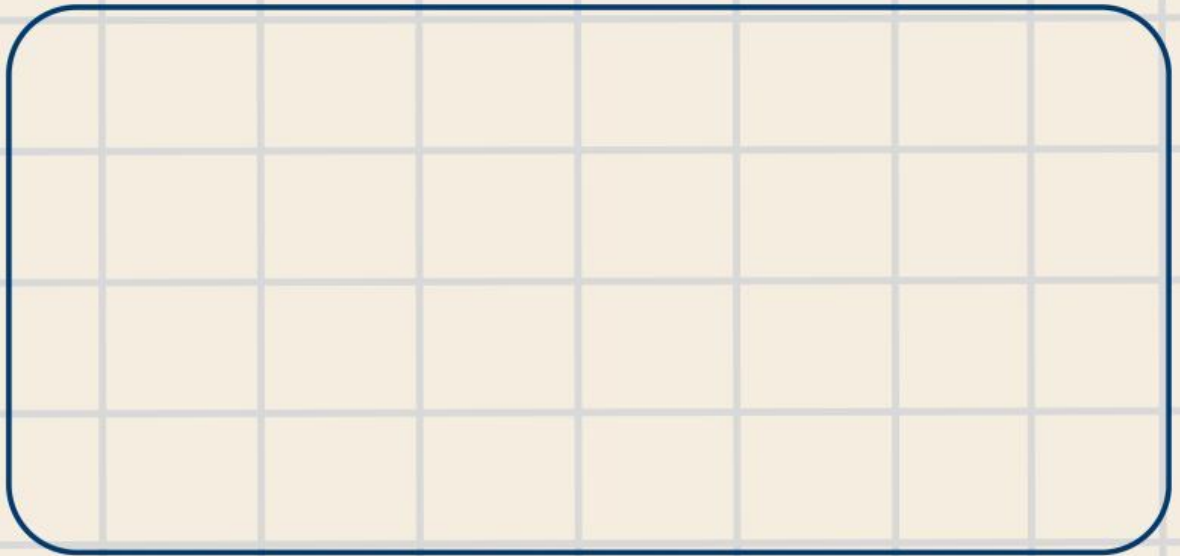


## ACTIVITY 4

### Conclude

## *Come On, Let's Conclude!*

**Based on the results of the data analysis obtained, draw conclusions related to the problem formulation that you have created from the practicum objectives!**



## *Student Assignments*

**After doing the practicum on the science worksheet, make a practicum report based on the experiments and results obtained then present it!**



# BIBLIOGRAPHY

Bold, K.W. (2020). *Humans Respiration Material*. USA: Padia Press.

Nuraini, Zubaidah dan Tim Pakar Raya. (2019). *Cliffs AP Biologi Edisi ke-2 Edisi Bahasa Indonesia*. Bandung: Pakar Raya.

**"Education is the ticket to future.  
Tomorrow owned by people who  
prepares himself since today."  
-Malcolm X-**

