



**PLANIT**  
TEACHERS

## Ventilation and Air Conditioning Systems: Designing for Indoor Air Quality

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**Student Name:** \_\_\_\_\_

**Class:** \_\_\_\_\_

**Due Date:** \_\_\_\_\_

### Introduction

This homework sheet is designed to reinforce your understanding of ventilation and air conditioning systems, their components, functions, and importance in maintaining indoor air quality. You will apply this knowledge to design a simple ventilation and air conditioning system for a given space.

## Section 1: Understanding Ventilation and Air Conditioning Basics

### Activity 1: Matching Game

Component	Function
Air Filters	_____
Vents	_____
Compressors	_____
Ducts	_____

### Activity 2: Short Quiz

1. What is the primary purpose of a ventilation system?

2. How do air conditioning systems contribute to indoor air quality?

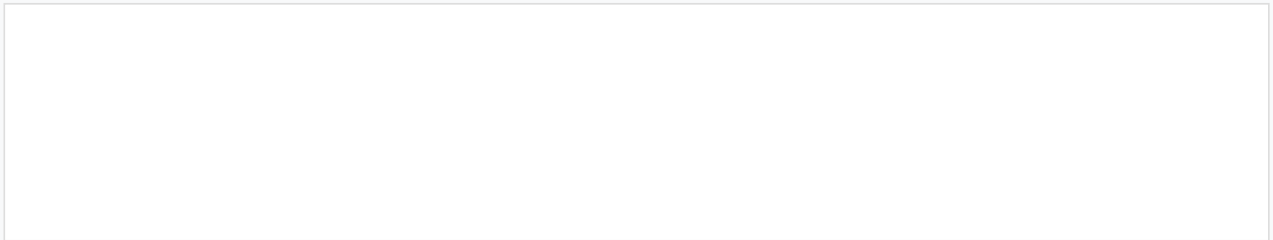
3. What are the benefits of using air filters in ventilation systems?

## Section 2: Designing a Ventilation and Air Conditioning System

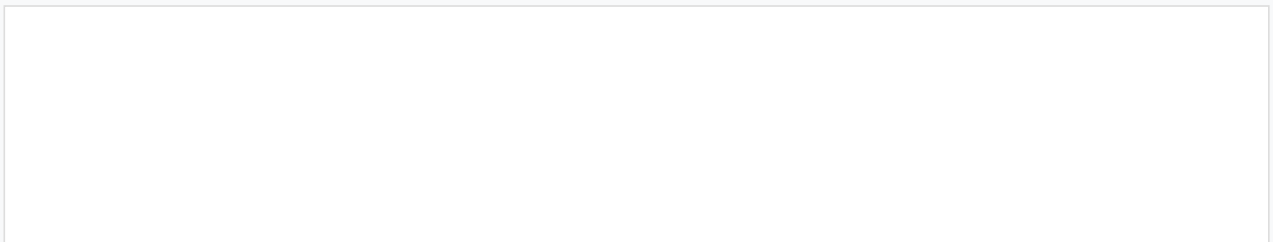
### Activity 1: Design Task

Imagine you are tasked with designing a ventilation and air conditioning system for a small classroom. Consider the size of the room, the number of occupants, and the activities that will take place there.

Draw a simple diagram of your proposed system:



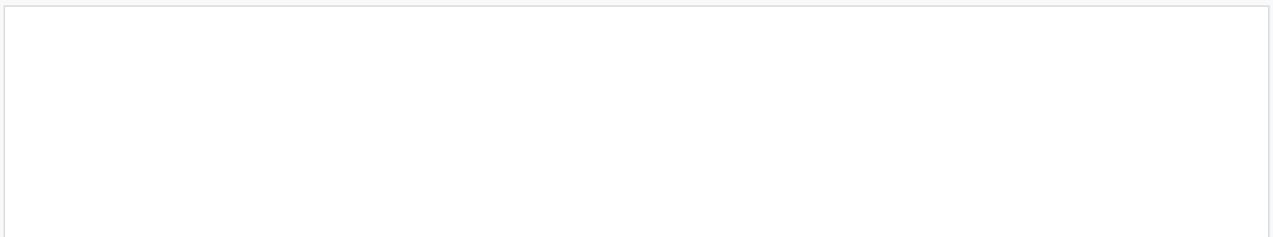
Label all components and include a brief description (approximately 100-150 words) of how your system works and why you made certain design choices.



### Activity 2: Case Study

"A school improved its indoor air quality by installing a new ventilation system. The system included air filters, vents, and a compressor. The school reported a significant reduction in student absenteeism due to respiratory issues."

Discuss in small groups what aspects of the system were most effective and why.



Write a short paragraph (approximately 100-150 words) summarizing your discussion.



### Section 3: Written Component

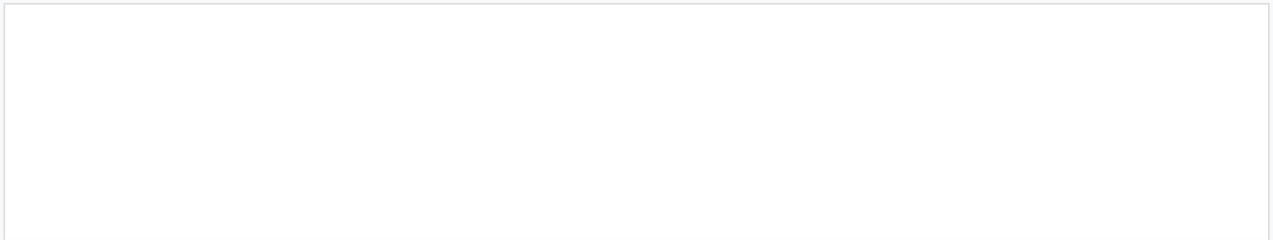
Write a short essay (approximately 250-300 words) explaining the importance of ventilation and air conditioning systems in maintaining indoor air quality. Be sure to include examples and references to support your arguments.

## Section 4: Extension Activities

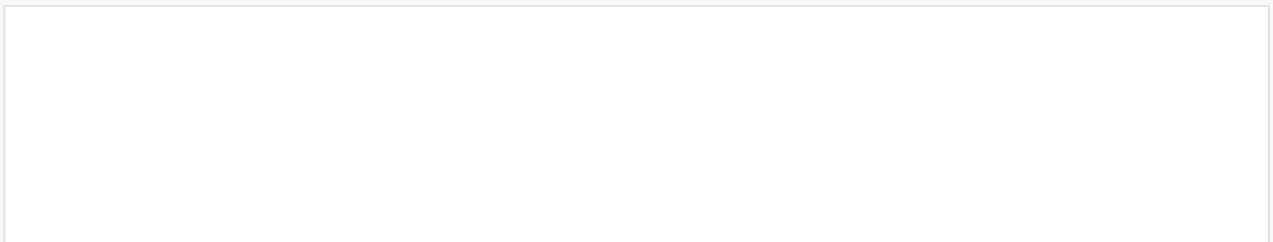
### Activity 1: Advanced Design Challenge

Design a ventilation and air conditioning system for a futuristic, eco-friendly building. Consider how you can incorporate renewable energy sources and minimize environmental impact.

Draw a simple diagram of your proposed system:



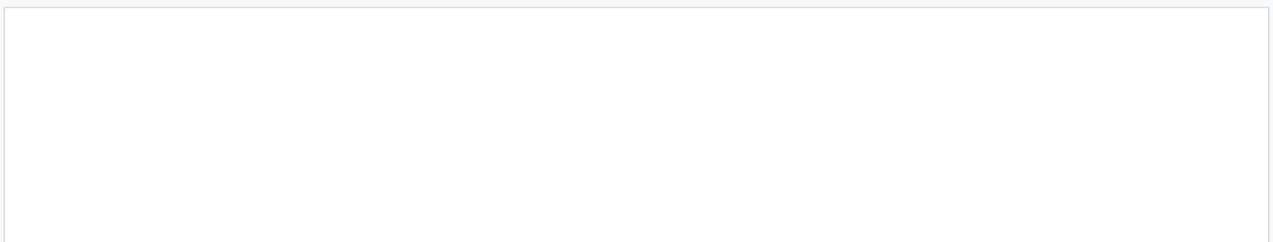
Label all components and include a brief description (approximately 100-150 words) of how your system works and why you made certain design choices.



### Activity 2: Research Project

Research and write a report on emerging technologies in ventilation and air conditioning, such as smart ventilation systems or advanced air purification technologies.

Write a short paragraph (approximately 100-150 words) summarizing your findings.



Include a list of potential benefits and challenges of implementing these technologies.



## Conclusion

By completing this homework sheet, you have demonstrated your understanding of ventilation and air conditioning systems, their importance, and how to apply this knowledge in practical scenarios. Remember to submit your work on time and to seek help if you need it.



## Parent/Guardian Notes

Encourage your child to conduct research and discuss their design choices with them.

Help your child manage their time effectively to ensure all components of the assignment are completed within the given timeframe.

Offer constructive feedback on their written and design work, focusing on clarity, completeness, and creativity.

## Additional Resources

Online tutorials or educational videos that explain ventilation and air conditioning systems in an engaging and easy-to-understand manner.

Real-life examples or news articles about the importance of indoor air quality and the role of ventilation and air conditioning systems in maintaining it.