

Name:

Date:

Clearing the air

Objective:

In this experiment, we'll investigate how a HEPA filter impacts a room's air quality by measuring PM2.5 levels during and after burning incense.

Group members:

Prediction

What do you think will happen to the PM2.5 levels in the room when the incense burns, and how will the HEPA filter affect those levels once it is turned on?

Experiment setup

What variable are we measuring?: _____

What variable are we changing?: _____

Controlled variables (what is everything else that we'll keep the same?): _____

Data collection

Baseline measurement

- Use the air pollution monitor to measure PM2.5 before lighting the incense.

Baseline PM2.5 level: ____ $\mu\text{g}/\text{m}^3$ (micrograms per cubic metre).

Burning incense

- Light the incense and let it burn for 5 minutes.
- Record the PM2.5 levels every minute during this time.

Time (minutes)	PM2.5 level ($\mu\text{g}/\text{m}^3$)	Observations (e.g., smoke, airflow)
0		
1		
2		
3		
4		
5		

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Data collection continued

Post-burn measurement

- Extinguish the incense and continue measuring PM2.5 levels every minute for 5 minutes.

Time (minutes)	PM2.5 level ($\mu\text{g}/\text{m}^3$)	Observations (e.g., smoke, airflow)
6		
7		
8		
9		
10		

Using the HEPA filter

- Turn on the HEPA filter and measure PM2.5 levels every minute for another 5 minutes.

Time (minutes)	PM2.5 level ($\mu\text{g}/\text{m}^3$)	Observations (e.g., smoke, airflow)
11		
12		
13		
14		
15		

Discussion and analysis

1. What was the difference between the PM2.5 levels before and after burning incense?
2. If the HEPA reduced the PM2.5 levels, how quickly did that happen?
3. Did the HEPA filter work faster or slower than you expected? Why do you think that happened?

Summarise key findings

Write 1 sentence summarising your findings. Include the words: burning incense, PM2.5 levels and HEPA filter.

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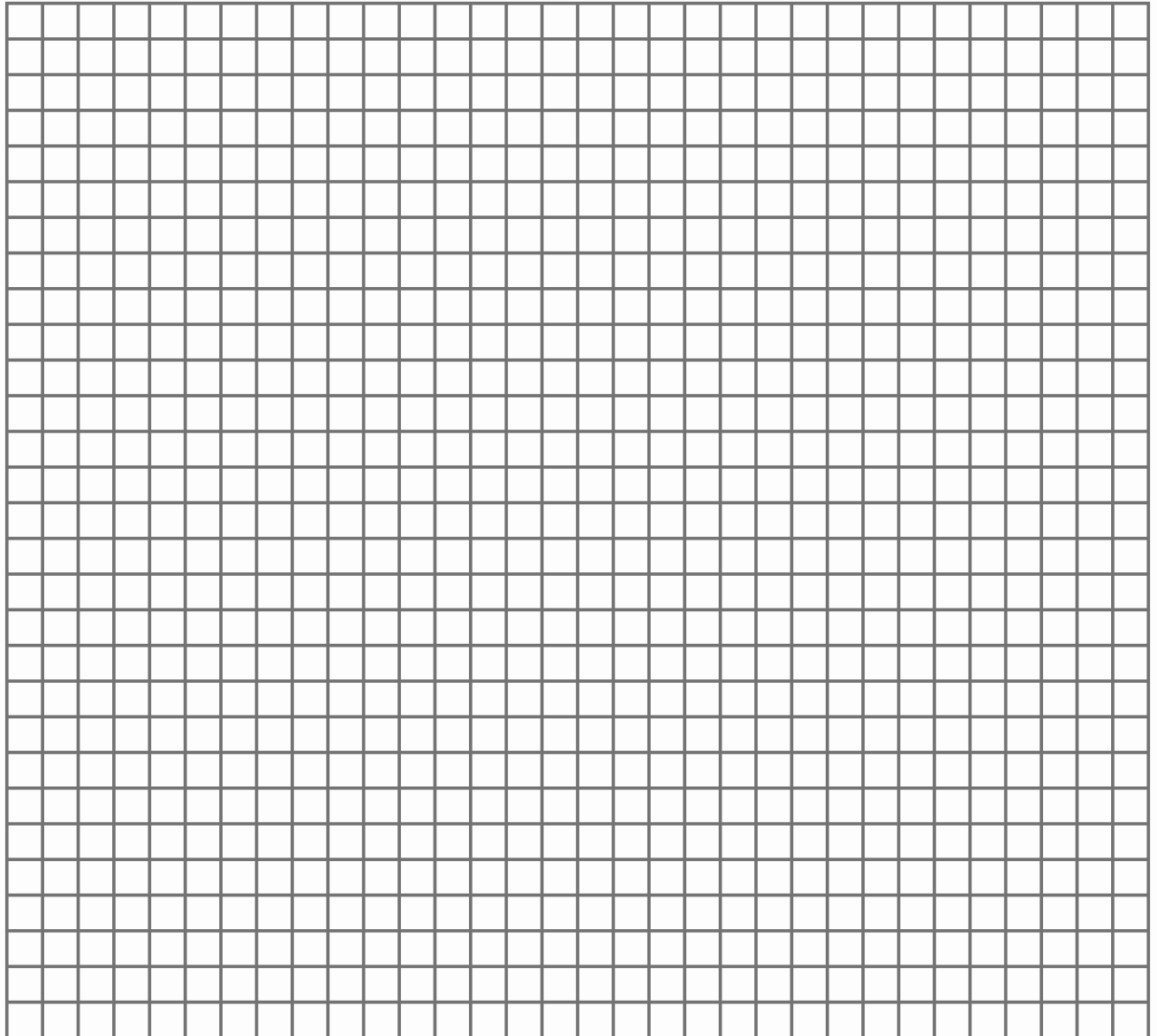
Graph your data

Use the table below to create a line graph showing how PM2.5 levels changed over time:

1. Label the X-axis (horizontal): Time (minutes); *suggested scale: 3 squares = 1 minute.*
2. Label the Y-axis (vertical): PM2.5 levels ($\mu\text{g}/\text{m}^3$); *suggested scale: 1 square = 10 $\mu\text{g}/\text{m}^3$.*
3. Use different colours or line styles for each phase: baseline, burning, post-Burn, and HEPA.

Title:

Label:



Label:

Extension questions

1. How could you improve the experiment to get more accurate results?
2. What other factors might affect PM2.5 levels in the classroom?