Ministry of Education, Skills, Youth & Information

Primary Exit Profile (PEP 5)

June 2025

Performance Task - Science

Time: 1 hour 30 minutes

Write your name and the name of your school below:

Name of Student

Name of School

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2032467

General Instructions:

This task has three parts: Part 1, Part 2, and Part 3.

Read the information in each part carefully. Use the information provided to answer ALL questions in each part.

Instructions to Begin:

Carefully read the introduction to the task then move on to answer each question.

Introduction to Task

The Old Backyard Shed

Mr. Blake always complains about how hot it gets inside his old tool shed, especially on sunny days. He also complains that at times he cannot touch the tools inside the shed because they get too hot.

Mr. Blake wants to build a new shed that will remain cool throughout the day and night. Mr. Blake believes that if he uses a different kind of material to build the walls of the new shed, it will be cooler on the inside.

Mr. Blake needs your help to:

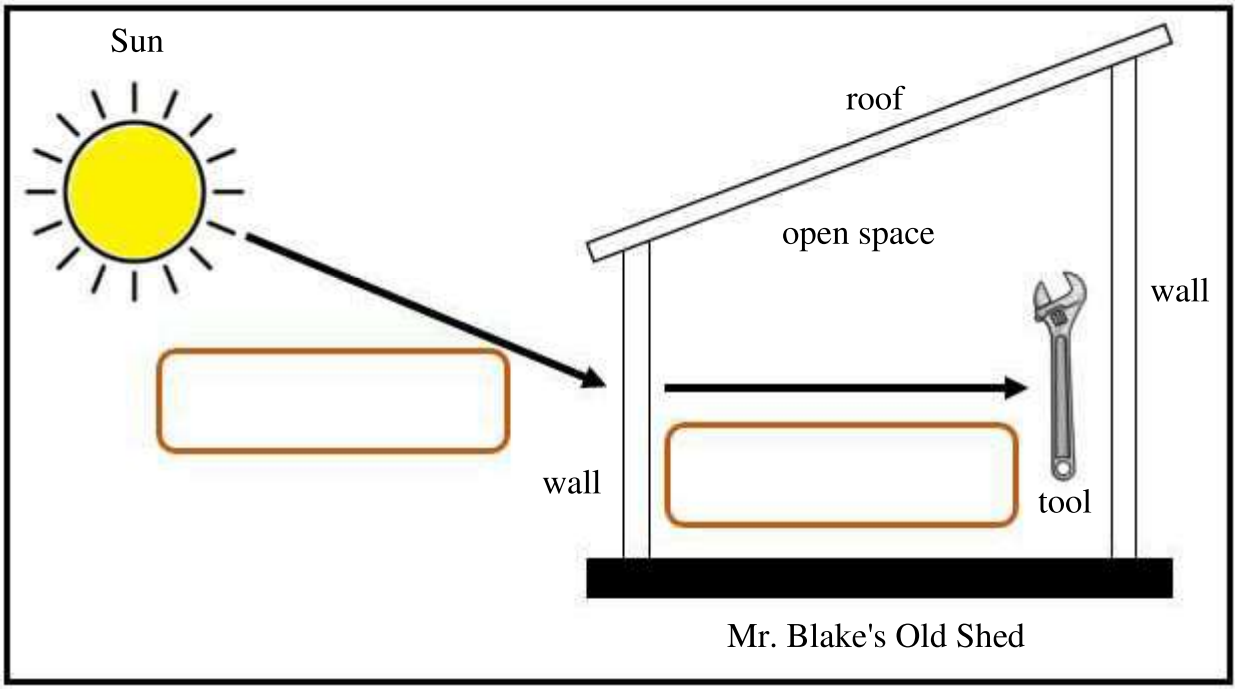
- describe how heat flows from one location to another
- analyse the data collected from his investigations
- identify materials that will be best for building the new shed
- design the new shed

Part 1 - Describing Heat Transfer

Mr. Blake does not understand why the tools are hot even though they are in the shed. He needs your help to describe how heat from the sun can make the tools hot.

1. Use **TWO** words from the box below to complete the diagram to describe how the sun's heat is transferred to the tools in Mr. Blake's shed.

convection, radiation, conduction



2. What word can be used to describe the walls of Mr. Blake's old shed?

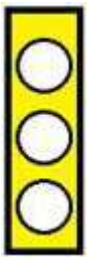
Place a tick (✓) in the box beside the word you have selected.

☐ insulator ☐ conductor

Part 2 – Mr. Blake's Investigation

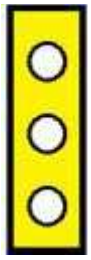
Mr. Blake wants to build the walls of the new shed from a material that would reduce the flow of heat into the shed.

Mr. Blake has decided to go with a material called **SAKS**.
SAKS has three versions as shown below.



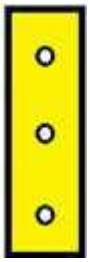
SAKS
Version 1

material has large, circular spaces



SAKS
Version 2

material has medium sized, circular spaces



SAKS
Version 3

material has small, circular spaces

Mr. Blake decided to conduct an investigation to find out if the size of the circular spaces affected how well **SAKS** reduced the flow of heat.

The aim and an incomplete hypothesis for Mr. Blake's investigation are shown in the box below; use them to answer question 3A.

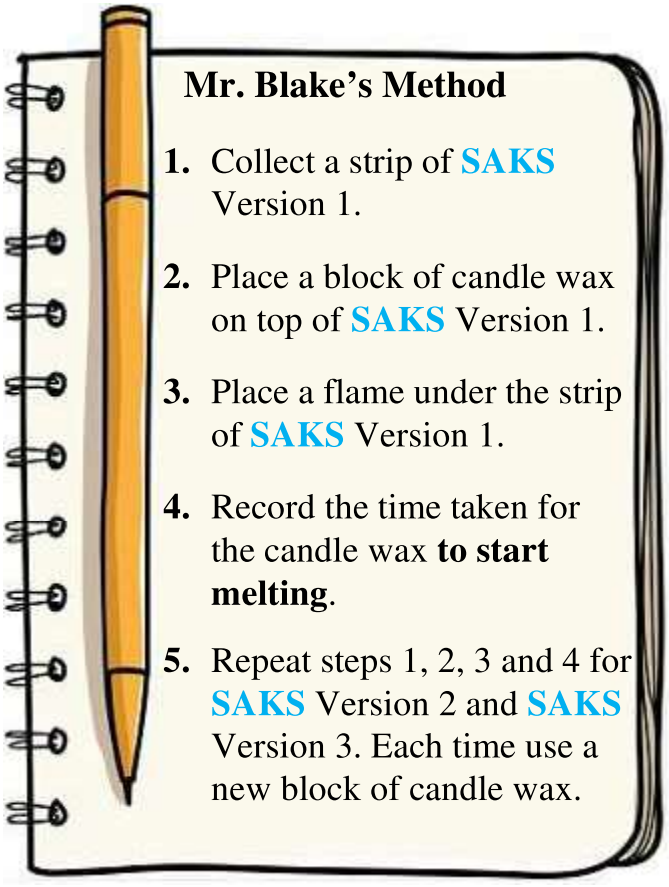
Aim:
To find out if the size of the circular spaces in **SAKS** affects how quickly heat passes through it.

Hypothesis:
If the size of the circular spaces are large, then _____.

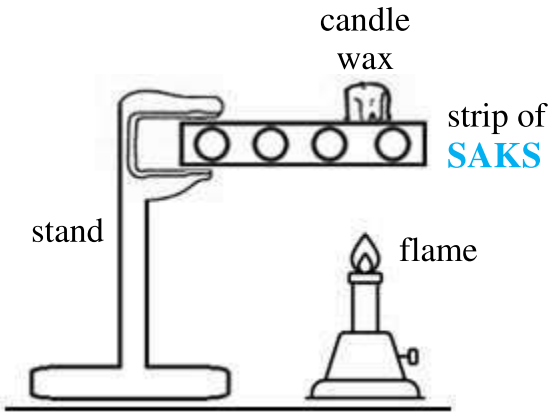
3A. Which statement will **CORRECTLY** complete Mr. Blake's hypothesis?
Shade the circle to show your answer.

- (A) the walls of the shed will be cool
- (B) heat will pass through the material slowly
- (C) the walls of the shed will be strong
- (D) it will allow water to get inside the shed

Mr. Blake's method (on the left) and investigation set up (on the right) are shown below. Use the information to answer question 3B.



Investigation Set up



Mr. Blake knows that during the investigation he should use strips of the same size for Version 1, Version 2 and Version 3 of SAKS.

3B. What other **TWO** factors should remain **the same** throughout the investigation?

At the end of the investigation, Mr. Blake created a table to show his results. Table 1 shows this information. Use Table 1 to answer questions 4A and 4B.

Table 1 - Time taken for candle wax to start melting on different versions of SAKS

	SAKS Version 1	SAKS Version 2	SAKS Version 3
Time taken for candle wax to start melting (minutes)	50	25	20

4A. Describe the pattern seen in the time taken for the candle wax to start melting as the size of the circular spaces in the **SAKS** material decreases.

4B. Use Table 1 to complete the bar graph below. **Be sure to draw and label bars correctly**.

Bar graph showing time taken for candle wax to start melting on different versions of **SAKS**

Part 3 – The Final Design

Mr. Blake noticed that the walls of the old shed received a large amount of the sun's heat. Based on his observations, Mr. Blake designed the new shed shown below.

Also shown below is a repeat of Table 1.

Use the information on this page to answer questions 5A and 5B.

Mr. Blake's New Shed Design

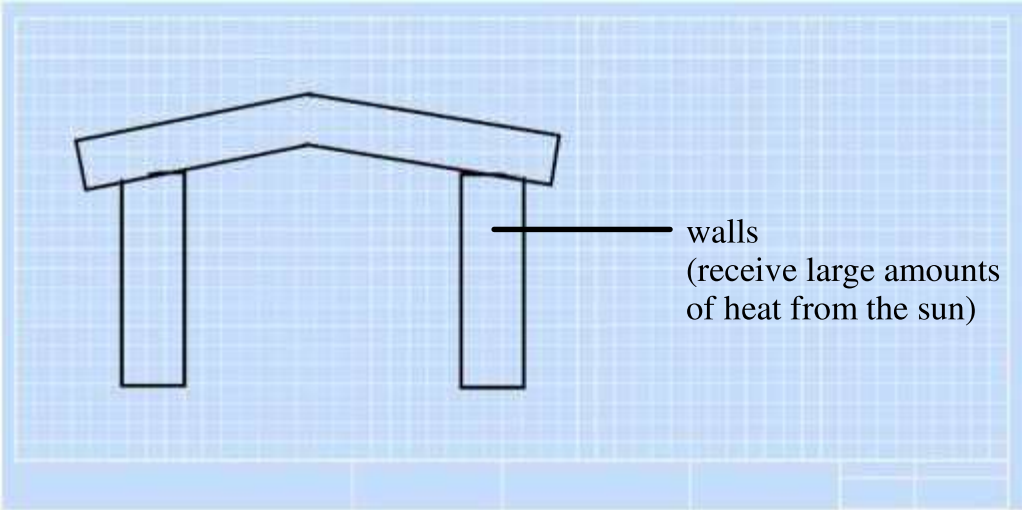


Table 1 - Time taken for candle wax to start melting on different versions of SAKS

	SAKS Version 1	SAKS Version 2	SAKS Version 3
Time taken for candle wax to start melting (minutes)	50	25	20

5A. Which **SAKS** material do you think is **BEST** to use for the walls of the new shed?
Place a tick (✓) in the box beside the SAKS version you have selected.

☐ **SAKS** version 1 ☐ **SAKS** version 2 ☐ **SAKS** version 3

5B. Explain the reason for the material you chose for **the walls**.
Support your answer by using the information on page 8.

To complete the new shed design, Mr. Blake also had to decide if it needed a night time cooling system. Mr. Blake used the table shown below to help him decide.

Use Table 2 and the statement in the box below it to answer question 6.

Table 2 - Average nightly outside temperature and average nightly inside temperature of sheds made from SAKS

Location	Temperature (°C)
Outside	21
Inside the sheds made from **SAKS**	24

Heat travels from warmer environments to cooler environments.

Using the information in Table 2 and the statement in the box, Mr. Blake decided that the new shed would **NOT** need a night time cooling system.

6. Explain why the new shed will not need a cooling system.
Use the data from Table 2 and the statement in the box to support your answer.

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Primary Exit Profile - 2025

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GENERAL INSTRUCTIONS

Read the instructions below before answering the questions in the booklet:

1. Write the answer to all questions in your test booklet.
2. Read each instruction carefully, before responding to the questions in each part.
3. Ensure that all questions are answered.

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Primary Exit Profile
Bringing Abilities to Light

BOOKLET # ASSIGNED

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