

STUDENT WORKSHEETS (LKM)
HEAT TRANSFER BY CONDUCTION

Subject : Physics
Phase/Class : F / XI
Time Allocation : 45 minutes
Learning Model : Cooperative Learning type Think-Pair-Share (TPS)

A. Student Identity

Name :

Class :

Partner's Name:

Date :

B. Learning Objectives

1. Students are able to analyze the process of heat transfer by conduction based on the differences in changes in butter on metal, plastic, and wooden spoons whose handles are immersed in hot water, after observing the experimental video and answering the observation questions correctly. (C4 – Relational)
2. Students are able to evaluate the choice of materials for everyday equipment based on the material's ability to conduct heat after discussing in pairs and presenting the results of their evaluation with appropriate reasons. (C5 – Relational)

C. Tools and Materials (in the Experimental Video)

- 3 spoons: metal, plastic, and wood
- 3 glass cups
- Butter
- Hot water

D. Instructions and Activity Steps

1. Access the Student Worksheet (LKM) link provided by the teacher, then complete your personal data.
2. Follow the learning flow systematically: Think Stage (Independent Analysis), Pair Stage (Pair Discussion), and Share Stage (Classical Discussion).
3. Answer each question analytically using structured and problem-oriented sentences.
scientific argumentation.

4. Each student is required to record and document the results of their thoughts on their respective worksheets.

A. Activity 1 – Think (Think Independently)

Scan the QR code or click the link below to watch a video experiment demonstrating heat transfer in three spoons made of metal, plastic, and wood. Observe the differences in the butter's temperature on each spoon.

LINK:

https://drive.google.com/file/d/1_PUBypIlvCRgjSeqB756y3Zmqeltx0io/view?usp=sharing

QR CODE:



1. Observation Results

Write down the results of your observations in the following table based on the video shown.

No.	Spoon material	Change in Spoon Temperature (Feels Hot/Still)	Observed changes in butter
1.	Metal		
2.	Plastic		
3.	Wood		

2. Observation Questions

Based on the observation table, why did the butter in the three spoons change?
different? Explain the relationship between the ability of each material to conduct heat.

Answer:
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B. Activity 2 – Pair (Pair Discussion)

Compare your observations and initial assumptions with your partner's observations. Discuss the following questions to reach a joint conclusion.

1. Understanding the Conduction Process

a. In which direction does heat move along the spoon, that is, from which part to which part?
Explain the cause.

Answer:
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b. Explain the process of heat transfer in a metal spoon. Does the substance that makes up the spoon move or not when the heat spreads?

Answer:
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2. Evaluation of the Application of Conduction in Daily Life

Consider the following example.

- The body of the pan is generally made of metal.
- Pot handles can be made of wood or heat-resistant plastic.

a. Was the material chosen appropriately? Explain why.

Answer:
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3. Drawing conclusions

Write a conclusion with your partner that answers the following two things: (1) how heat moves by conduction, and (2) how the type of material is related to the ability to conduct heat .

Answer:
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C. Activity 3 Share

a. Write down the opinions of the partners who appear, whether you agree or disagree, and your reasons based on the results of observations or the concept of conduction.

Answer:
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b. Review your conclusions from the 2 Pair activity and write down the revised conclusions. If they are correct, write "Correct" and the reason.

Answer:
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