Heat transfer for Grade 7: conduction, convection and radiation

Practice worksheet - Science · Grade 7

Name: _____ Date: _____

Show your working. Answers and explanations follow on a separate page.

Try each task before opening its answer. Give an example or reason, not only a label.

Write an answer and your reason before opening the explanation. Check the reasoning as well as the final answer.

1. What is the net spontaneous direction of heat transfer?

2. Does conduction require the whole solid to move?

3. Which states of matter support ordinary bulk convection?

4. Which mechanism can cross a vacuum?

5. Is "heat always rises" correct?

6. Why can room-temperature metal feel cooler than wood?

7. Does a coat create body heat by itself?

8. Can insulation slow ice melting?

Practice continued

9. Why is a vacuum gap useful?

10. Does a cool object emit no thermal radiation?

11. Can one cooking scene involve all three mechanisms?

12. Name one control when comparing containers.

13. Should a learner touch hot metal to identify conduction?

14. Why is "it keeps things hot" incomplete as an explanation?

Answers and explanations

Answer key - Science · Grade 7

Heat transfer for Grade 7: conduction, convection and radiation

1. Hotter to cooler.
A temperature difference drives the transfer.

2. No.
Energy is transferred through interactions within the material.

3. Liquids and gases.
They can flow.

4. Radiation.
Electromagnetic waves do not require a material medium.

5. No.
Some warm fluids rise, but energy can transfer in other directions.

6. It can draw energy from your hand faster.
Feeling alone does not establish a lower temperature.

7. No.
It mainly reduces transfer from the body.

8. Yes.
It reduces incoming energy from warmer surroundings.

9. It greatly reduces conduction and convection across the gap.
Radiation still needs consideration.

10. No.
Objects above absolute zero emit radiation.

11. Yes.
Different parts of the route can use different pathways.

12. For example: equal starting temperature and equal water amount.
Unequal starting conditions can confuse the comparison.

13. No.
Use a diagram or supervised demonstration.

14. It states the effect without the transfer mechanism.
Explain which pathways are reduced.