

Heat Detectives

Read evidence about heat transfer and temperature measurements.

S3P1 “Obtain, evaluate, and communicate information about the ways heat energy is transferred and measured.”

NAME _____ DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each sentence that tells how heat moves. Circle every temperature measurement, then write 1, 2, and 3 beside the first mention of conduction, convection, and radiation.

Maya's Cooling Cup Test

- 1 At lunch, Maya held a metal spoon in hot soup. Soon the spoon handle felt warmer. Heat moved through the solid spoon by conduction. Conduction happens when touching particles pass energy along. The soup also moved as warmer liquid rose and cooler liquid sank. This moving liquid transfers heat by convection.

2 Maya and her partner poured equal amounts of warm water into three cups. They used a thermometer to measure temperature in degrees Celsius, or °C. A thermometer shows how hot or cold something is. They took a first reading, then waited ten minutes. The table shows their measurements.

WARM WATER TEMPERATURE TEST

Cup	Cover	Start Temperature	Temperature After 10 Minutes
A	No cover	60°C	52°C
B	Paper sleeve	60°C	55°C
C	Aluminum foil	60°C	49°C

- 3 All cups cooled because heat moved from warmer water to cooler air and objects nearby. Cup B had the highest temperature after ten minutes. Its paper sleeve slowed conduction from the cup to Maya's hand. Heat can also travel by radiation, such as sunlight warming a sidewalk. Radiation can move through empty space.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 What caused the spoon handle to feel warmer? Name the way heat moved.

2 What movement in the soup shows convection?

3 Which cup had the highest temperature after 10 minutes? What was its temperature?

4 How did Maya and her partner measure and compare the cooling water?

3 YOUR TURN _____ Your own words

Choose an everyday heat-transfer example that is different from the examples in the reading. Write 3 sentences: name the type of heat transfer, explain how heat moves, and tell how two thermometer readings could give evidence of the change.

PART 1 • READ AND MARK

Underline each sentence that tells how heat moves. Circle every temperature measurement, then write 1, 2, and 3 beside the first mention of conduction, convection, and radiation. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What caused the spoon handle to feel warmer? Name the way heat moved.	Heat moved through the solid spoon by conduction.
2	What movement in the soup shows convection?	Warmer liquid rose and cooler liquid sank. The moving liquid transferred heat.
3	Which cup had the highest temperature after 10 minutes? What was its temperature?	Cup B had the highest temperature, 55°C.
4	How did Maya and her partner measure and compare the cooling water?	They used a thermometer to take a temperature reading at the start and another reading after 10 minutes. Then they compared the temperatures.

PART 3 • YOUR TURN (SAMPLE ANSWER)

A warm baked potato cools on a plate by conduction. Heat moves from the potato into the plate because they touch. I could measure the potato's temperature at the start and after ten minutes to show that it cooled.

Accept equivalent descriptions of conduction, convection, or radiation that correctly name a heat pathway. For the open response, accept any reasonable everyday situation that is different from the passage examples and includes two thermometer readings.