

Heat From Rubbing

Observe how rubbing objects can produce heat.

SC.3.P.11.2 "Investigate, observe, and explain that heat is produced when one object rubs against another, such as rubbing one's hands together."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each sentence that tells about objects rubbing. Circle each word or phrase that tells how the objects became warmer, so you can connect rubbing to heat.

Warmth Without a Flame

- ① On a cool morning, Maya placed her palms together and moved them back and forth quickly. At first, her hands felt normal. After several seconds, they felt warmer. The rubbing made the surfaces of her hands push and slide against each other. This action produced heat. Maya did not need a heater or a flame to notice the change.
- ② At recess, Jordan rubbed the eraser end of a pencil on a desk for a short time. Then he touched the eraser carefully. It felt a little warmer than before. Jordan observed that rubbing two objects, the eraser and the desk, produced heat. Rubbing can make objects warmer, even when the heat is small and hard to see.
- ③ Friction is the force that happens when surfaces rub against each other. It can slow moving objects, and it can produce heat. The amount of heat can change. Rubbing faster or pressing surfaces together more firmly may make more heat. In each investigation, observe what feels warmer and explain that the rubbing between objects caused the heat.

2 ANSWER WITH EVIDENCE Use the passage

1 What did Maya do with her hands before they felt warmer?

2 What caused Maya's hands to feel warmer?

3 Which two objects did Jordan rub together?

4 Name one way the passage says rubbing may make more heat.

3 YOUR TURN Your own words

Write exactly two sentences that describe a safe test with two objects not named in the passage. In the first sentence, tell what you would rub. In the second sentence, tell what you would observe and explain why.

PART 1 • READ AND MARK

Underline each sentence that tells about objects rubbing. Circle each word or phrase that tells how the objects became warmer, so you can connect rubbing to heat. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What did Maya do with her hands before they felt warmer?	She placed her palms together and moved them back and forth quickly.
2	What caused Maya's hands to feel warmer?	Rubbing the surfaces of her hands against each other produced heat.
3	Which two objects did Jordan rub together?	The eraser end of a pencil and a desk.
4	Name one way the passage says rubbing may make more heat.	Rub faster or press the surfaces together more firmly.

PART 3 • YOUR TURN (SAMPLE ANSWER)

I will rub two wooden craft sticks together quickly for 20 seconds and carefully touch them. I predict they will feel warmer because rubbing their surfaces produces heat.

Accept any safe, realistic pair of objects not named in the passage, such as craft sticks, fabric pieces, or smooth stones. The response must connect a warmer observation or prediction to heat produced by rubbing.