

Heat Changes Matter

Read how temperature affects physical and chemical changes.

SC.5.P.9.1 "Investigate and describe that many physical and chemical changes are affected by temperature."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each physical change and circle each chemical change. Write a small T beside words that tell how temperature affected each change.

A Temperature Test

- ① At a school snack stand, an ice pop sat in the sun. Heat moved from the warm air into the frozen juice. The solid ice pop melted into liquid juice, but it was still juice. Later, some liquid water in a pan became water vapor as it was heated. Melting and evaporating are physical changes because no new substance forms.
- ② Temperature can also affect chemical changes, which make new substances. When pancake batter touches a hot griddle, heat helps chemical reactions create a browned pancake with new tastes and smells. An egg heated in a pan changes from clear, runny egg white to firm white egg. Cooling the cooked egg will not turn it back into raw egg, because cooking made new substances.
- ③ Scientists can compare temperatures to see how fast a chemical change happens. In bread dough, living yeast uses sugar and releases carbon dioxide gas. In a warm place, the dough usually rises faster than it does in a cool place. If the dough becomes too hot, the yeast can die, and less gas is made. Temperature may speed up, slow down, or stop a change.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Why is the melting ice pop a physical change?

2 What two observations in the passage show that heating an egg causes a chemical change?

3 How does a warm place affect bread dough compared with a cool place?

4 What can happen when bread dough gets too hot, and how does this affect the gas made?

3 YOUR TURN _____ Your own words

Choose a material that is not named in the passage. In two panels, show it before and after a temperature change. Label each temperature and what you observe, then write one sentence that identifies the change as physical or chemical and explains why.

PART 1 • READ AND MARK

Underline each physical change and circle each chemical change. Write a small T beside words that tell how temperature affected each change. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Why is the melting ice pop a physical change?	It is still juice after it melts, so no new substance forms.
2	What two observations in the passage show that heating an egg causes a chemical change?	The egg white changes from clear and runny to firm and white. It also cannot change back into a raw egg after cooling.
3	How does a warm place affect bread dough compared with a cool place?	In a warm place, the dough usually rises faster than it does in a cool place.
4	What can happen when bread dough gets too hot, and how does this affect the gas made?	The yeast can die, so less carbon dioxide gas is made.

PART 3 • YOUR TURN (SAMPLE ANSWER)

Panel 1: Cold butter, solid. Panel 2: Butter heated in a pan, liquid. Sentence: Heating butter caused a physical change because it melted but remained butter.

Accept accurate temperature labels and observations that show a change caused by heating or cooling. Accept either a physical or chemical example if the student's classification and explanation are scientifically sound.