

Read About Heating and Cooling

HEATING AND COOLING DEFINITION

Heating is when you increase the temperature of something and cooling is when you lower the temperature. Heating and cooling can cause changes we can see. Sometimes these changes are reversible and sometimes they are not.

To better understand how heating and cooling works...

LET'S BREAK IT DOWN!

Heating raises the temperature of something.

When things heat up, they get warmer. We heat food to make breakfast, lunch and dinner. Heating coffee or tea can make it more enjoyable. People also heat clothes to take out the wrinkles.



Heating causes a marshmallow to warm up.

A marshmallow can change from a solid to a liquid when it is heated. Sometimes that marshmallow just gets soft and warm and sometimes it can get burned.

Cooling lowers the temperature of things.

In places where it is very cold, a cup of water left outside can turn into ice. Changing from a liquid to a solid is called freezing. You can keep food in a freezer which keeps it very cold.



Chilling your drink in ice is an example of cooling.

Common ways to cool things down are to put them in ice or taking them some place where it is cold. This will lower the temperature. On a hot day, a cold cup of lemonade can taste refreshing!

Some observable changes are reversible.

Reversible means that the change caused by heating or cooling can be undone. One example of this is when you melt butter. After melting, you can cool it down and it will become solid again.





Some observable changes are non-reversible.

Non-reversible means that the change from heating or cooling cannot be undone. One example of this is when you cook an egg. After heating, it cannot go back to the way it was before.

HEATING AND COOLING VOCABULARY

Heating

To raise the temperature of something.

Cooling

To lower the temperature of something.

Reversible Change

A change that can be undone.

Non-Reversible Change

A change that cannot be undone.

Solid

Matter that keeps its shape.

Liquid

Matter that takes the shape of its container.

HEATING AND COOLING DISCUSSION QUESTIONS

What are some examples of heating?

Heating up marshmallows in a fire and heating up clothes with an iron are both examples of heating.

What are some examples of cooling?

Cooling down a drink with ice and cooling your breath due to the cold air outside are both

common examples.

When you heat up a stick of butter, what state of matter does it become?

Butter changes from a solid to a liquid when it is heated.

How can you tell if a change is reversible or not?

A reversible change means the change can be undone. If the object that changed can go back to its original form, then it is reversible.

What are some examples of reversible changes?

Melting butter then cooling it and melting an ice cube then re-freezing it in the freezer are both common examples.

What are some non-reversible changes? How do you know?

Popcorn popping, cooking eggs, making cupcakes, and lighting something on fire are all common examples. You know it's non-reversible because it cannot change back to the original form.
