

Harnessing

Heat

Take-on temperature. Build a thermometer and heat things up with friction. Feel how hot and cold can change at a touch. Apply your red-hot knowledge to your Heat Sheet.

SUMMARY:

In this class, children learn about the concepts of heat and heat transfer. They act out hot and cool molecule movements and experiment with a pair of unequal copper pipes to feel heat change. The children witness the practical side of heat-sensitivity—thermopaper browns under the force of a heat gun and ice cubes melt on a heat transfer block. Children get hands-on building thermometers, participate in a tactile temperature test, and heat things up in a thermometer-changing, sand-shaking session. This one-hour class warms down with a take-home temperature-sensitive card that reacts to hot hands!

EDUCATIONAL VALUE:

This class introduces children to the physics facts on heat. Children learn how molecules move at different temperatures and how thermometers work. The instructor uses various tools like a heat gun and thawing blocks to demonstrate how we use temperature sensitive equipment in our everyday lives. A series of interactive heat-induced experiments show how the hot and cold we feel is relative. Shaking up a bottle of sand shows how friction increases temperature. Children explore materials that transfer heat at different rates. The Heat Sheet is a temperature-sensitive card that children take home to extend their learning experience.

TAKE-HOME MESSAGE:

- 1 Friction creates heat.
- 2 We use thermometers to measure heat.
- 3 Hot molecules move around faster than cold ones.

TAKE-HOME PRODUCT:

Heat Sheet

NORTH CAROLINA ESSENTIAL STANDARDS:

- 2.P.2.1 Give examples of matter that change from a solid to a liquid and from a liquid to a solid by heating and cooling
- 3.P.2 Understand the structure and properties of matter before and after they undergo a change.
- 3.P.3.2 Recognize that energy can be transferred from a warmer object to a cooler one by contact or at a distance and the cooler object gets warmer.
- 4.P.3.1 Recognize the basic forms of energy (light, sound, heat, electrical, and magnetic) as the ability to cause motion or create change.
- 5.P.3 Explain how the properties of some materials change as a result of heating and cooling.

