

Heating Up

Summary

This is a three part exploration which allows students to investigate the relationship between heating and cooling materials and their related expansion and contraction properties. They will also investigate the relationship between temperature and motion.

Main Core Tie

SEEd - Grade 6

[Strand 6.2: ENERGY AFFECTS MATTER Standard 6.2.2](#)

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

- [Heating Up worksheet](#)

bimetal strips or 15. These can be ordered from any science supply catalog. If cost is an issue you may use 15 cm of clear tape stuck to the dull side of aluminum foil. (Students will do this in the lab set up.)

heat source: Bunsen burner, or hot water in a container.

ice water in containers

metric rulers

markers

tongs or tweezers

goggles for safety

steel ball and ring kit

Instructional Procedures

1. Hook Activity:

Use the ball and ring set to ask the question: How does heating change the way the ball moves through the ring? Demonstrate how the heated ball will no longer pass through the ring. Ask the students to think about their answer or write it down and you will come back to it at the end of the lab.

The steel ball and ring teacher demonstration will show that the ball will fit into the ring before it is heated. It will not fit through the ring after it is heated because the ball expanded. When it is cooled it will fit through again.

Explain any safety procedures/precautions to the students. Safety goggles are need for this activity.

Guidance can be given as students set up the laboratory equipment. Re- enforce safety issues and emphasize that the metal strip are NOT to be placed in the flame. The aluminum foil strip will burn if placed directly in the flame. Strips should be placed on the wire platform on the ring stand 6 inches above the flame.

A common misconception at this age is that the size of the particle increases and decreases in size rather than the spacing between the molecules increases or decreases when heated. Be aware of this as you teach this information.

Extension: Have other materials available for students to make bimetal strips out of.
Suggestions: duct tape, masking tape, electrical tape.

Assessment Plan

Scoring Guide:

Students followed directions correctly 4 3 2 1 0

Students answer questions accurately 4 3 2 1 0

Students provided explanations and sketched diagrams. 4 3 2 1 0

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)