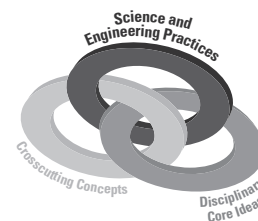


# The Atmosphere and Energy



## Unit Overview

**Phenomenon:** Cold food in a cooler stays cold, and food in a solar cooker gets hot.

**Storyline:** Adventurers who brave extreme weather conditions to trek across California's scorching Death Valley and Antarctica's frozen surface must be prepared. The Extreme Adventures Company has hired you to design equipment for these adventurers to help them stay healthy and safe.

## Earth's Atmosphere

Gather density and temperature data on each layer of the atmosphere and plot the data on a graph.

## Taking Earth's Temperature

Build a thermometer, then use it to test a variety of items to determine which are insulators and which are conductors.

## Engineering Challenge: Minimizing and Maximizing the Rate of Heat Transfer

Extreme Adventures Company is holding a contest for the best cooler and the best solar oven design. Students design a device to either minimize or maximize heat transfer while meeting all criteria and constraints.

## Earth and Solar Energy

Explore how different forms of light interact with the atmosphere through building a model of the layers of the atmosphere and simulations that demonstrate the greenhouse effect, then apply what you've learned as you predict the temperatures of planets.

## Performance Assessment: Surviving Extreme Temperatures

Develop a proposal for an improved cooler or solar cooker based on revised criteria and constraints, applying key scientific principles to optimize the design.

**ANCHORING PHENOMENON**

**Anchoring Phenomenon:** Cold food in a cooler stays cold, and food in a solar cooker gets hot.



1. Complete the first two columns of this chart.
  - List what you think you already know about this unit’s phenomenon.
  - Then write at least three questions you have about this phenomenon.

Return to this chart at the end of the unit. Add the key information you learned about this phenomenon. Give evidence!

<b>Know</b>	<b>Want to Know</b>	<b>Learned</b>