Heating and Cooling parent guide

You do not need to be an expert to read this book together. Your job is to ask how the explanation works and give the learner room to think.

What this book helps explain

Track heat, electricity and moisture rather than relying on temperature alone.

Three short conversations

First, ask: Why can a floor feel colder than a rug in the same room?

Next, read “A thermometer is not an energy meter” together. Ask the learner to draw the idea and explain one unfamiliar term. Use the glossary rather than guessing.

Then use the activity below. Let the learner try before reading the answers on the next page. Ask what information would change the answer.

Try it together

A fictional heat pump uses 1 kWh of electricity and moves 2 kWh of heat from outdoors to indoors. A separate heater rated 2 kW runs for 90 minutes. Draw the energy arrows and label amount versus rate.

1. How much heat reaches indoors through the heat pump?

2. What is its heating COP?

3. How much electricity does the separate heater use?

A small activity at home

Observe a closed window or a cold drink for condensation and discuss water vapor. Do not open refrigerant systems, heaters or electrical equipment.

Heating and Cooling conversation notes

Answers to discuss

1. 1 + 2 = 3 kWh.

2. COP = 3/1 = 3 under the stated conditions.

3. 2 kW × 1.5 h = 3 kWh.

Listen for this distinction

Temperature is not total thermal energy. COP depends on conditions and is not a claim that energy is created.

Useful follow-up

Discuss the floor and rug using different rates of heat transfer from a foot. Do not assume their temperatures differ solely because they feel different.

When the explanation is unclear

Ask “Which part are we sure about?” and “Can you show me with a smaller example?” Say when you do not know. Read the relevant chapter together and check its sources if the question goes beyond the example.

Signs of understanding

The learner can explain the idea in their own words, use a diagram or example, and say one thing the example does not prove. Repeating the book word for word is not the goal.

Keep the conversation comfortable

Use fictional people and amounts. Do not require personal disclosures. Short sessions are enough; stop before frustration turns reading into a test.

Reading route

A thermometer is not an energy meter; Three out for one in; Relative to what?

Companion to Heating and Cooling: NOW It Makes Sense by Sonny Saggar. First edition. This guide uses original supplementary teaching examples.