Physics > Big idea PMA: Matter > Topic PMA1: Heating and cooling

Key concept (age 11-14)
PMA1.4: Thermal store of energy

Progression toolkit: Thermal store of energy

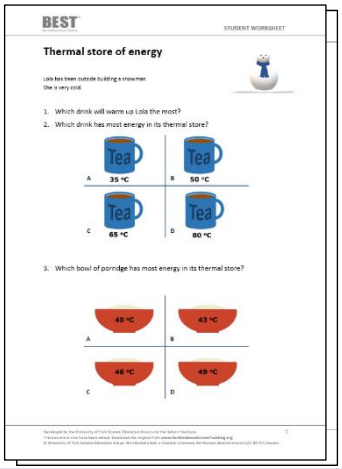
Learning focus	Each different material will have more energy in its thermal store if either its temperature or mass is increased.				
As students' conceptual understanding progresses they can:	CONCEPTUAL PROGRESSION →				
	Identify which of two objects or substances has the most energy in its thermal store when the only difference between them is temperature.	Identify which of two objects or substances has the most energy in its thermal store when the only difference between them is their mass.	Explain the difference between energy (in a thermal store) and temperature.	Describe how the specific heat capacity of a material affects the amount of energy in its thermal store.	Use the equation $E = mc\Delta T$ to calculate the energy needed to increase the temperature of a material. **B**
Diagnostic questions	Thermal store of energy		Three bears Hot fill	Specific heat capacity	
Response activities		The same Bunsen	Energy vs temperature	Hot metal	How much energy?

Key:

P Prior understanding from earlier stages of learning

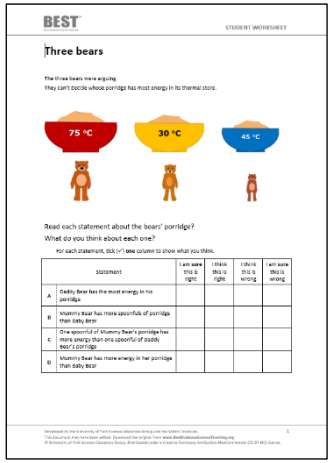
B Bridge to later stages of learning

Thermal store of energy



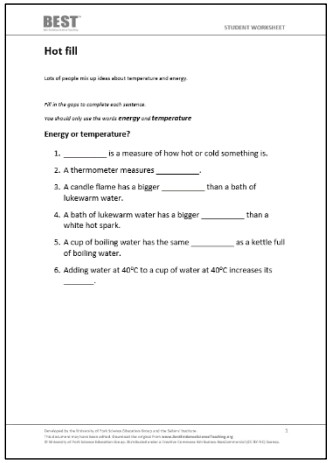
Simple multiple choice

Three bears



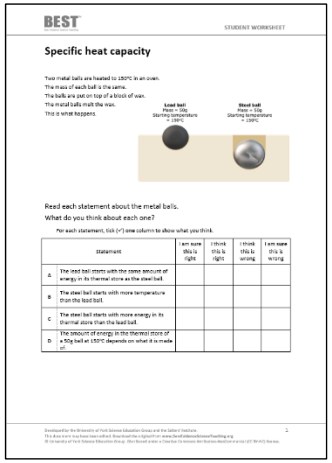
Confidence grid

Hot fill



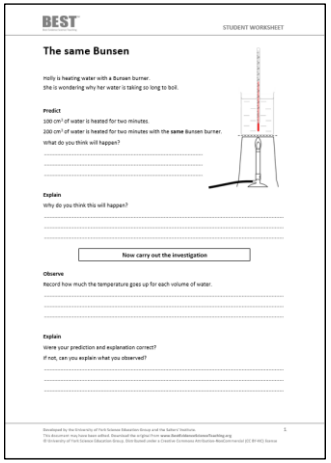
Focused cloze

Specific heat capacity



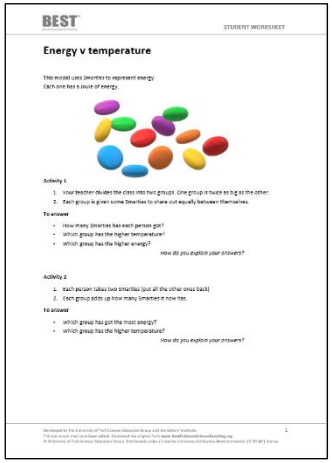
Confidence grid

The same Bunsen



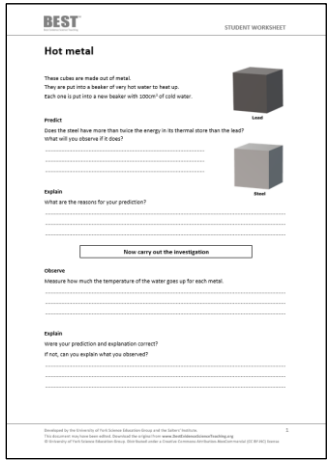
Predict, explain, observe, explain practical/demonstration

Energy vs temperature



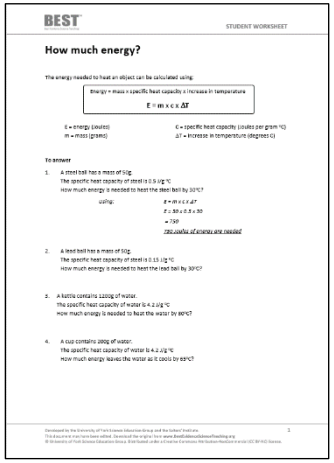
Challenge to thinking - modelling

Hot metal



Predict, explain, observe, explain practical/demonstration

How much energy?



Application and practice calculations