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

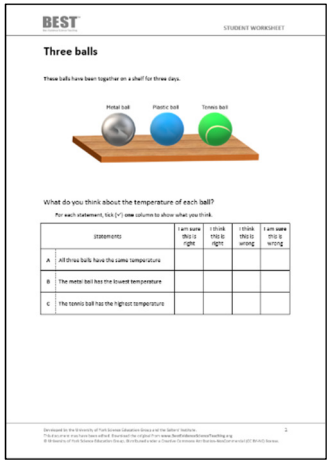
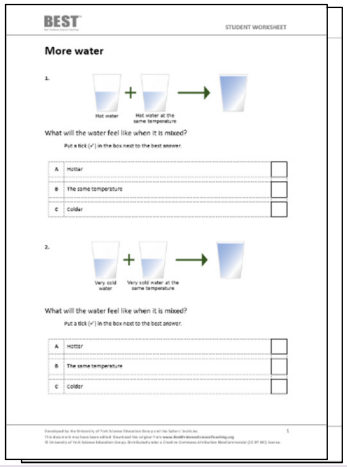
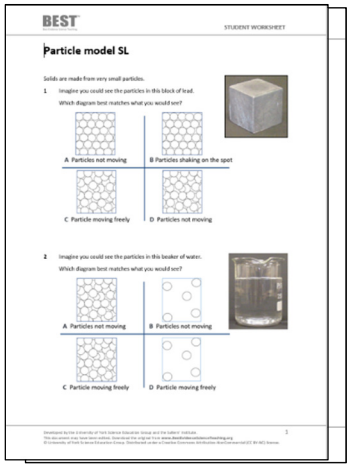
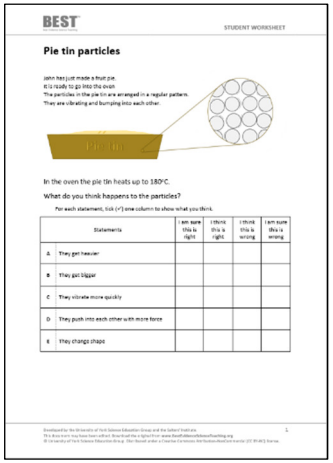
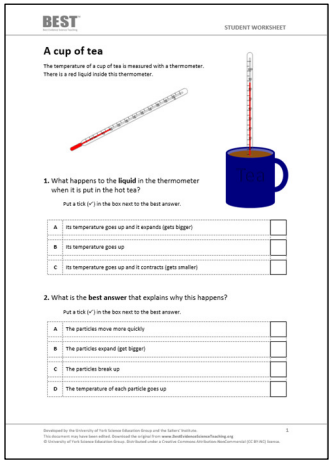
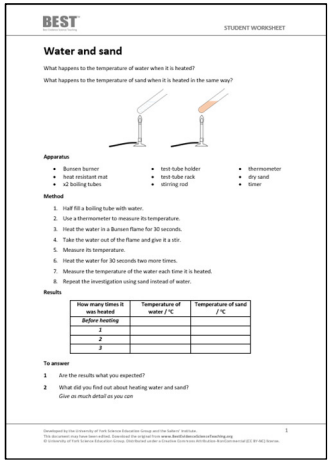
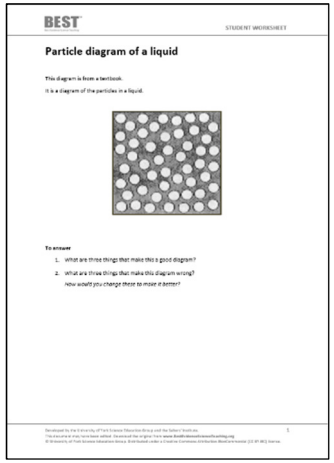
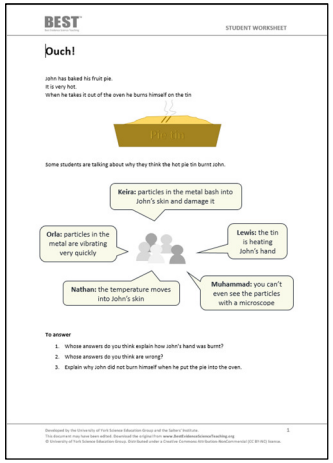
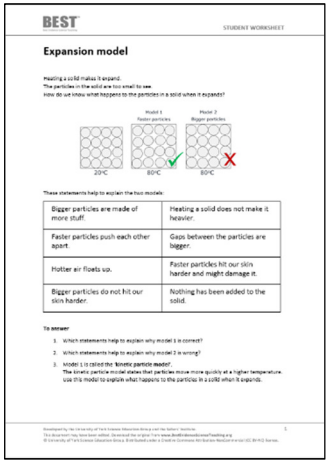
Progression toolkit: Temperature

Learning focus	Temperature is a measure of the average speed at which the particles in a substance or material are moving.				
As students' conceptual understanding progresses they can:	CONCEPTUAL PROGRESSION Predict the temperature of different materials that are all in thermal equilibrium with the room. **P**	Predict the temperature reached by mixing samples of water that are all at the same temperature. **P**	Describe the arrangement and movement of particles in a substance in the solid and liquid states.	Describe the changes in particles of a substance or material when its temperature is changed.	Explain the changes in volume of solids and liquids when their temperature is changed.
Diagnostic questions	Three balls	More water	Particle model SL	Pie tin particles	A cup of tea
Response activities	Water and sand		Particle diagram of a liquid	Ouch! Expansion model	

Key:

P Prior understanding from earlier stages of learning

B Bridge to later stages of learning

Three balls	More water	Particle model SL	Pie tin particles	A cup of tea
				
Confidence grid	Simple multiple choice	Simple multiple choice	Confidence grid	Two-tier multiple choice
Water and sand	**Particle diagram of a liquid**	**Ouch!**	**Expansion model**	
				
Application - practical	Critique a representation	Talking heads	Critique a representation	