Physics > Big idea PMA: Matter > Topic PMA4: Particle explanations

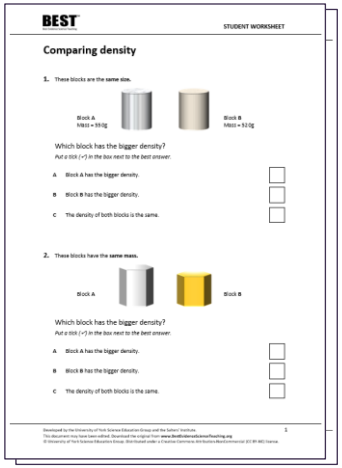
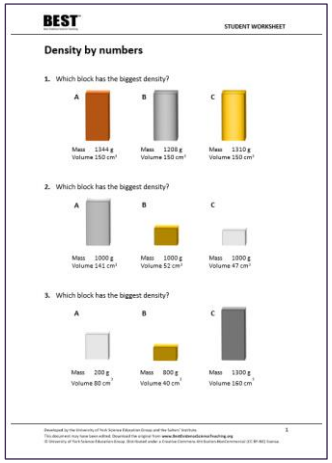
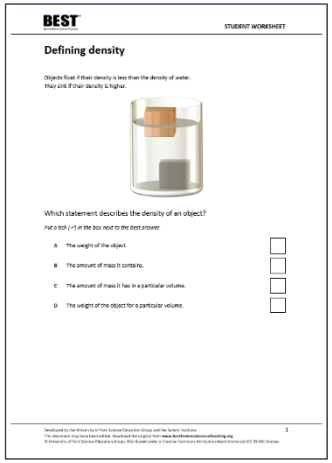
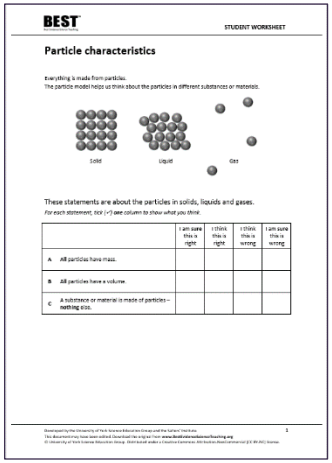
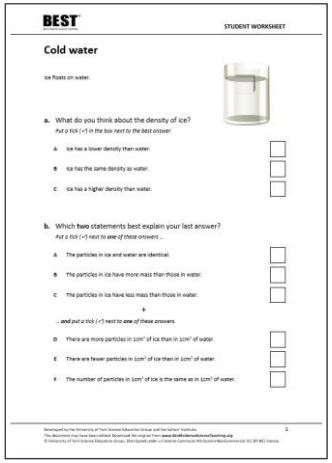
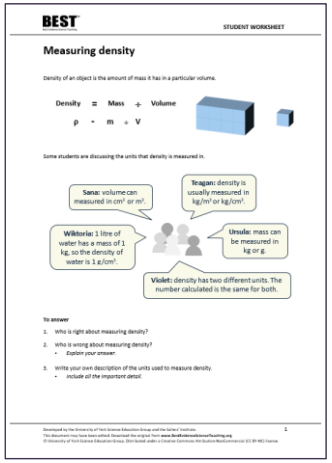
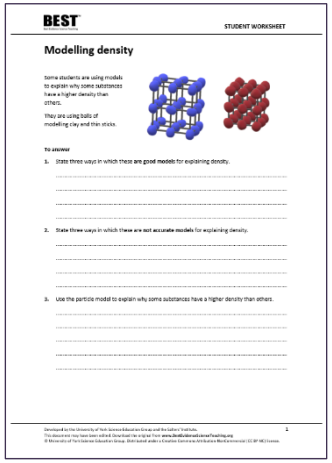
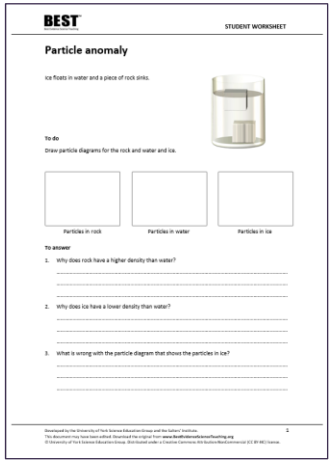
Key concept (age 14-16)
PMA4.1: Density

Progression toolkit: Density

Learning focus	Density, the mass of material in $1m^3$ or in $1cm^3$, is dependent on both the mass of its particles and their spatial arrangement.				
As students' conceptual understanding progresses they can:	CONCEPTUAL PROGRESSION →				
	Describe characteristics of objects or substances with high (or low) densities. **P**	Compare the density of objects that differ in both mass and volume. **P**	Explain the equation ρ=m/V and use it to make calculations.	Use the particle model to explain differences in density.	Explain why the density of water in its solid state is less than the density of water in its liquid state.
Diagnostic questions	Comparing density Railway sleepers	Density by numbers	Defining density	Particle characteristics	Cold water
Response activities			Measuring density	Modelling density	Particle anomaly

Key:

P Prior understanding from earlier stages of learning

Comparing density	Railway sleepers	Density by numbers	Defining density	Particle characteristics
				
Simple multiple choice	Focused cloze	Simple multiple choice	Simple multiple choice	Confidence grid
Cold water	**Measuring density**	**Modelling density**	**Particle anomaly**	
				
Two-tier multiple choice	Talking heads	Critiquing a representation	Application and practice	