Key concept (age 11-14)
PMA2.1: Floating, sinking and density

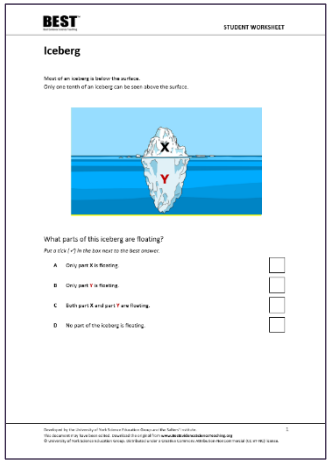
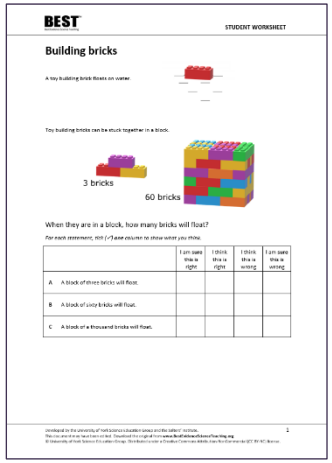
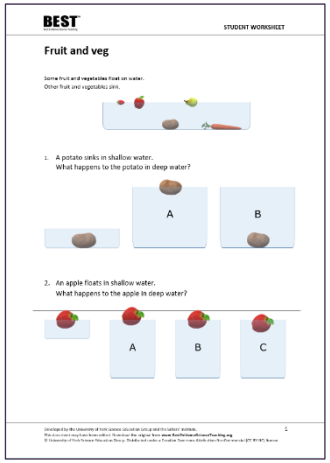
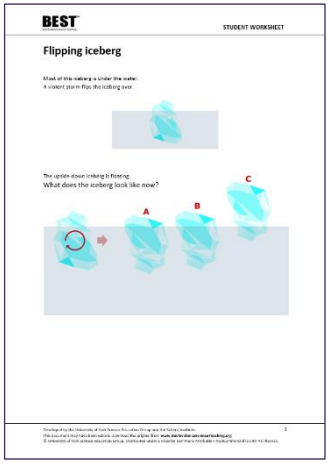
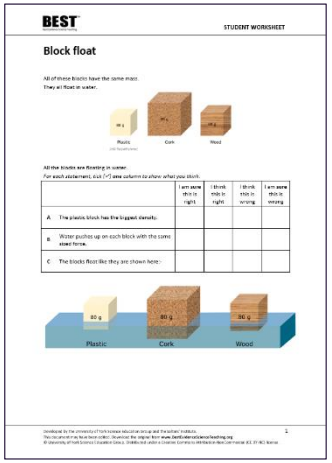
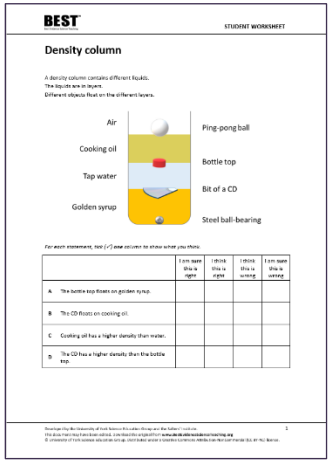
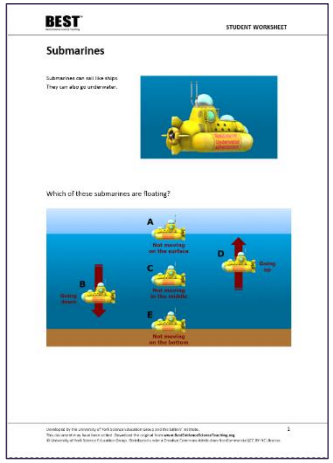
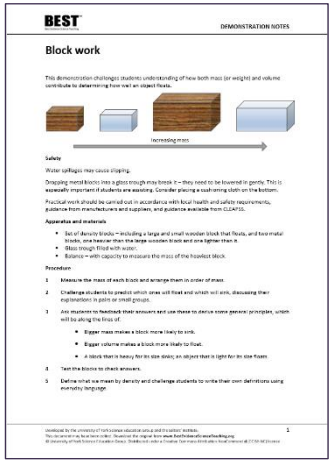
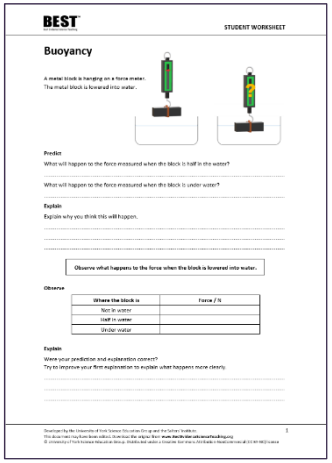
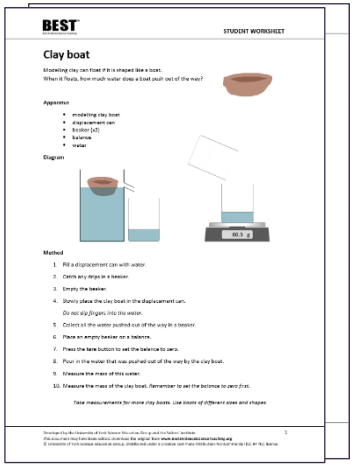
Progression toolkit: Floating, sinking and density

Learning focus	An object that is surrounded by a fluid (liquid and/or gas) floats if its overall density is less than the density of the fluid.				
As students' conceptual understanding progresses they can:	CONCEPTUAL PROGRESSION →				
	Identify objects that are floating. **P**	Describe how the mass and volume of an object affect how well it floats.	Describe how the shape of an object affects how well it floats.	Explain how the density of an object determines how well it floats.	Explain how the density of a liquid (or gas) determines how well objects float in it. **B**
Diagnostic questions	Iceberg	Building bricks Fruit and veg	Flipping iceberg	Block float	Density column
Response activities	Submarines	Block work	Buoyancy Clay boat		Grape expectations

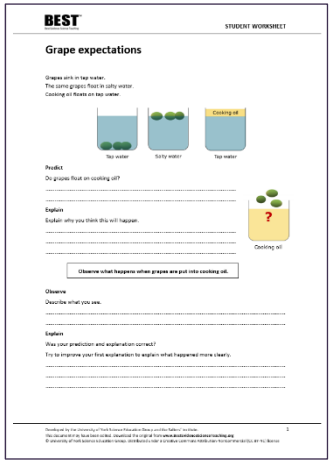
Key:

P Prior understanding from earlier stages of learning

B Bridge to later stages of learning

Iceberg	Building bricks	Fruit and veg	Flipping iceberg	Block float
				
Simple multiple choice	Confidence grid	Simple multiple choice	Simple multiple choice	Confidence grid
Density column	**Submarines**	**Block work**	**Buoyancy**	**Clay boat**
				
Confidence grid	Application and practice - problem	Clarifying - demonstration	Predict, explain; observe, explain PEOE	Application and practice - practical

Grape expectations


BEST

STUDENT WORKSHEET

Grape expectations

Grapes sink in tap water.
The same grapes float in salty water.
Cooking oil floats on tap water.

Tap water | Salty water | Cooking oil | Tap water

Predict

Do grapes float on cooking oil?

Explain

Explain why you think this will happen.

?

Cooking oil

Observe what happens when grapes are put into cooking oil.

Observe

Describe what you see.

Explain

Was your prediction and explanation correct?

Try to improve your first explanation to explain what happened more clearly.

Predict, explain; observe, explain
PEOE