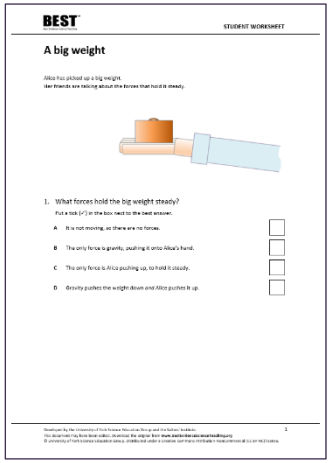
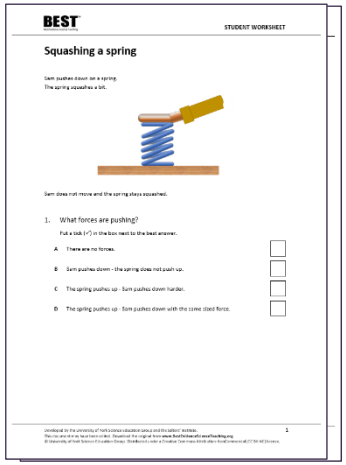
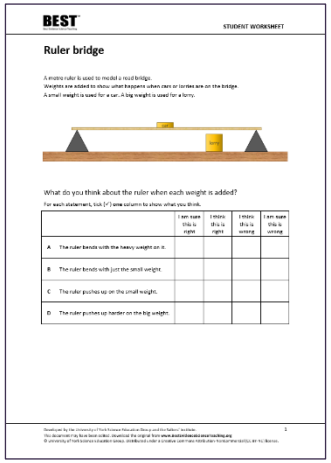
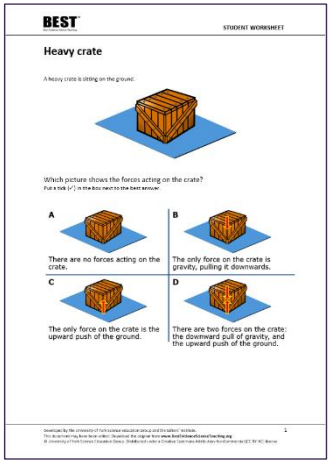
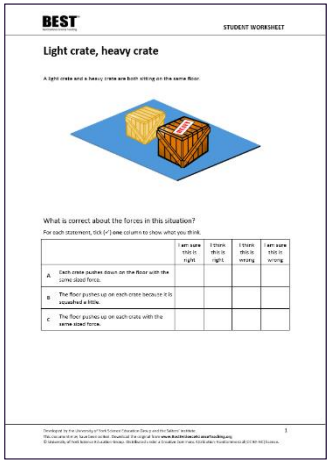
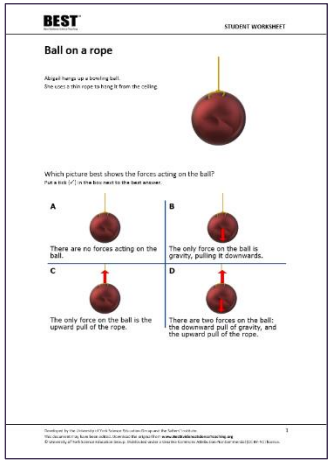
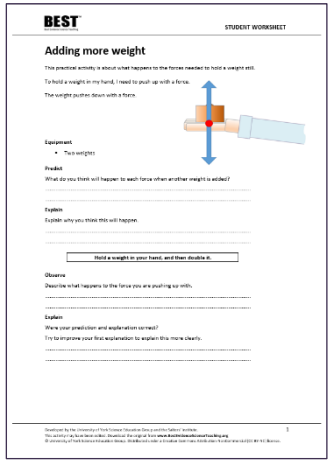
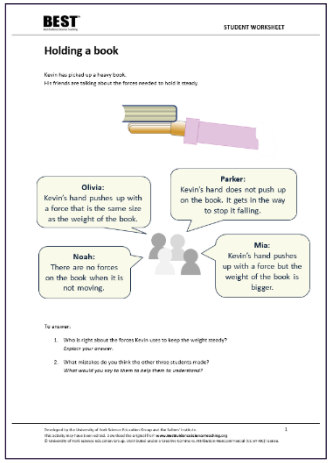
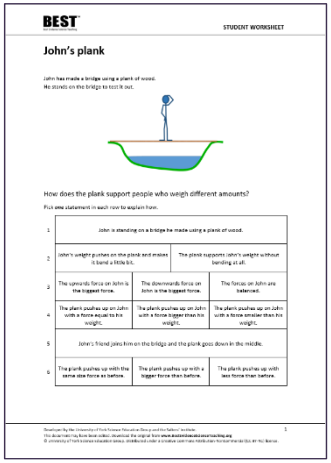
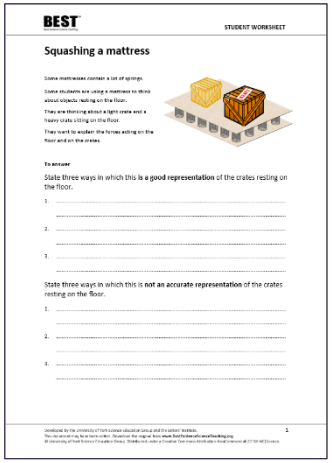
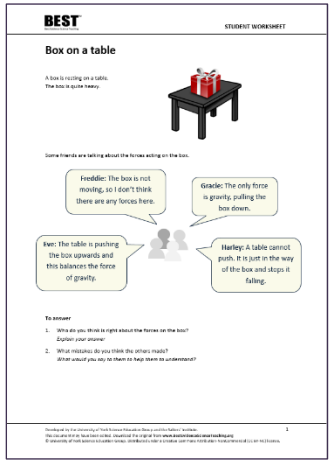
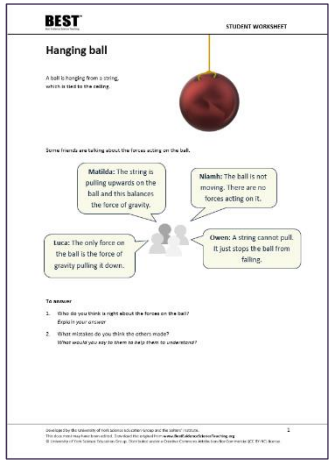
Physics > Big idea PFM: Forces and motion > Topic PFM3: More about force

Key concept (age 11-14)
PFM3.2: Hidden forces

Progression toolkit: Hidden forces

Learning focus	An object resting on the floor squashes it a little and, because at a microscopic level the floor is springy, it pushes back on the object with an equal sized force in the opposite direction to the object's weight.				
As students' conceptual understanding progresses they can:	CONCEPTUAL PROGRESSION →				
	Describe how a person's hand uses force to support different sized weights.	Describe how the size of force exerted by a spring changes as it is squashed.	Explain how a ruler, made into a bridge, changes to support weights of different sizes.	Explain how objects of different weights can all be supported by the same floor.	Explain how a string can support objects of different weights and hold each one at rest.
Diagnostic questions	A big weight	Squashing a spring	Ruler bridge	Heavy crate	Ball on a rope
				Light crate, heavy crate	
Response activities	Adding more weight		John's plank	Squashing a mattress	Hanging ball
	Holding a book			Box on a table	

A big weight	Squashing a spring	Ruler bridge	Heavy crate	Light crate, heavy crate
				
Simple multiple choice	Simple multiple choice	Confidence grid	Simple multiple choice	Confidence grid
Ball on a rope	**Adding more weight**	**Holding a book**	**John's plank**	**Squashing a mattress**
				
Simple multiple choice	Predict, explain, observe, explain	Talking heads	Explanation story	Critiquing a representation

Box on a table	Hanging ball
	
Talking heads	Talking heads