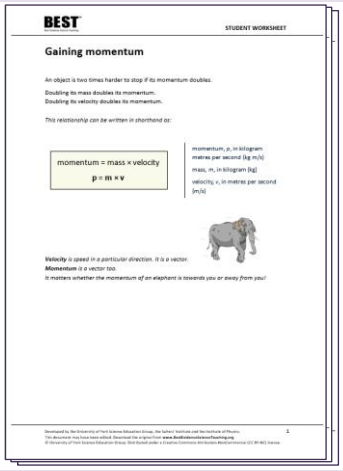
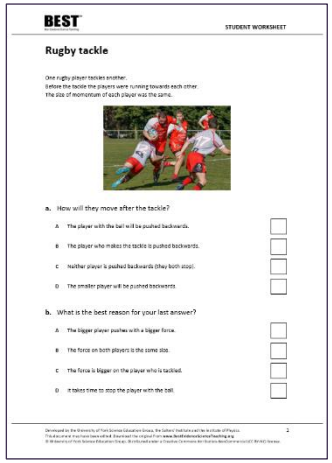
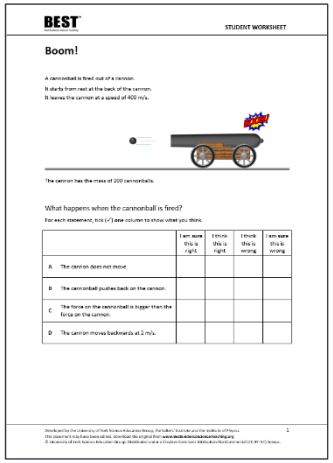
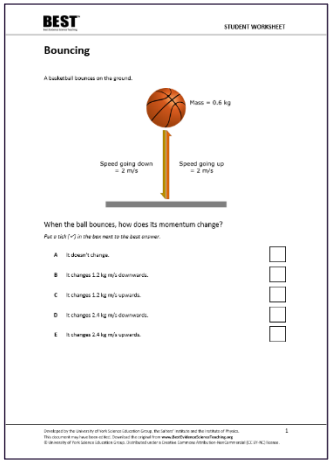
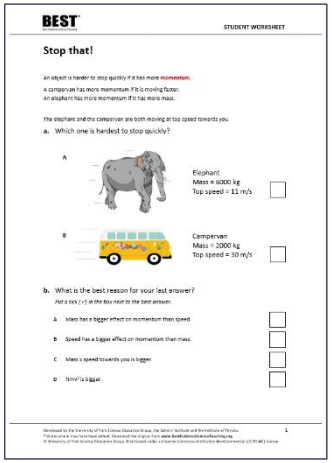
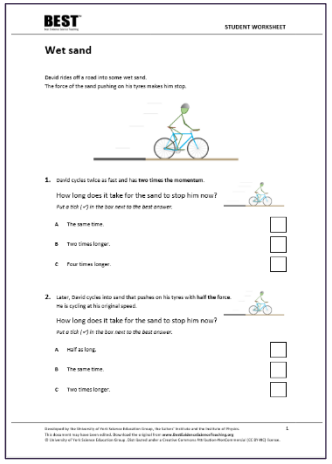
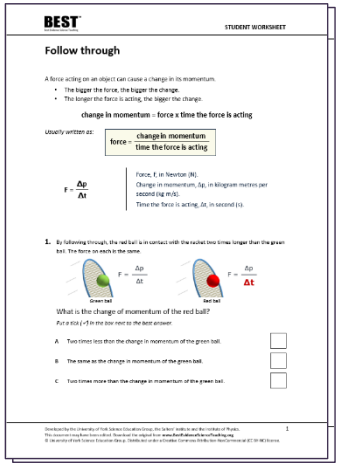
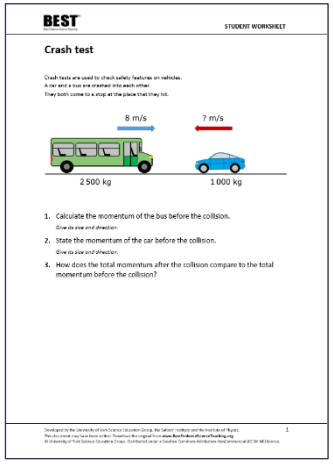
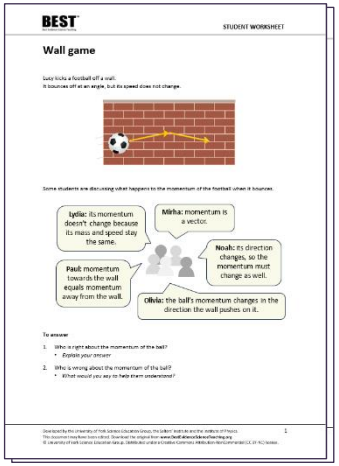
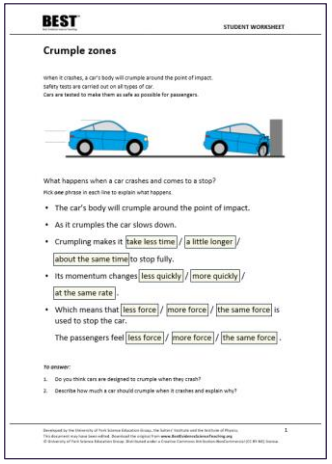
Progression toolkit: Changing momentum

<table>
<tr><td>Learning focus</td><td colspan="5">In a collision (or any closed system), momentum is conserved and the size of the forces are equal to the rate of change of momentum.</td></tr>
<tr><td>As students' conceptual understanding progresses they can:</td><td colspan="5">CONCEPTUAL PROGRESSION</td></tr>
<tr><td></td><td>Calculate momentum using p = m x v.
P</td><td>Describe what happens to the motion of objects colliding head on.</td><td>Determine changes in momentum, Δp.</td><td>Explain and use the relationship between force, change in momentum and time the force is acting.</td><td>Apply an understanding of F=Δp/Δt to explain how forces and momentum can be controlled.
B</td></tr>
<tr><td>Diagnostic questions</td><td rowspan="2">Gaining momentum</td><td>Rugby tackle</td><td rowspan="2">Bouncing</td><td>Stop that!</td><td rowspan="2">Follow through</td></tr>
<tr><td>Boom!</td><td>Wet sand</td></tr>
<tr><td>Response activities</td><td colspan="2">Crash test</td><td>Wall game</td><td colspan="2">Crumple zones</td></tr>
</table>

Key:

P Prior understanding from earlier stages of learning

B Bridge to later stages of learning

Gaining momentum	Rugby tackle	Boom!	Bouncing	Stop that!
				
Simple multiple choice	Two-tier multiple choice	Confidence grid	Simple multiple choice	Two-tier multiple choice
Wet sand	**Follow through**	**Crash test**	**Wall game**	**Crumple zones**
				
Simple multiple choice	Simple multiple choice	Application and practice – problem	Talking heads	Explanation story