

<p><b>Topic:</b> Forces</p>	<p>Year 5 Age 9-10</p>	<p>Aqua dynamics</p>
<p><b>Working Scientifically</b> <b>Review:</b> Explain the degree of trust in the results</p>		<p><b>Conceptual Knowledge</b> Identify the effect of water resistance</p>
<p><b>Assessment Focus</b></p> <ul style="list-style-type: none"> <li>• Can children use test results to make predictions relating water resistance to surface area?</li> <li>• Can children identify variables which may affect the results?</li> </ul>		
<p><b>Activity</b> Challenge pairs to make a ball of plasticine or blue-tack fall as slowly as possible through water (size will depend on how big your container is – a large transparent plastic box or measuring cylinder or transparent tube in a bucket). Ask children to explain why they think it will fall more slowly e.g. draw and label design or hold up and explain. Test designs e.g. repeating in groups or as a whole class with a number of the children timing. Support children to identify the control variables: depth of water, mass of plasticine, position of drop. Challenge pairs to change the shape so that it falls quickly through the water. Encourage them to use the test results to predict which shapes will fall fastest.</p> <p><b>Adapting the activity</b> <b>Support:</b> Provide drawings of designs to try e.g. flat, boat-shaped, parachute-shaped. Select middle time if repeating readings. <b>Extension:</b> Average times if repeating readings. Explore different depths or amounts of plasticine.</p> <p><b>Key Questions</b></p> <ul style="list-style-type: none"> <li>• Whose design do you think will fall the slowest/fastest? Why?</li> <li>• What do we need to keep constant so that it is a fair comparison?</li> <li>• Will it make a difference which way up we drop it?</li> <li>• Will the shape of the object make a difference to the speed at which it falls?</li> <li>• Does stability make a difference?</li> <li>• How can we make our measurements as accurate as possible?</li> </ul>		
<p><b>Assessment Indicators</b></p> <p><b>Not yet met:</b> Suggests which shape falls fastest but little recognition of issues with fairness or accuracy.</p> <p><b>Meeting:</b> Evaluates how effectively variables were controlled, e.g. <i>We couldn't get the position the same because some shapes turned over at the surface slowly, so we didn't know whether to time from when it went in the water, or when it had turned over.</i></p> <p><b>Exceeding:</b> Is able to repeat readings independently and explains how this increases accuracy, e.g. <i>it was difficult to know when to start timing so we took the middle value/mean average of three readings.</i></p>		

