


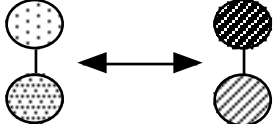
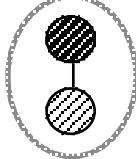
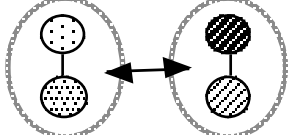
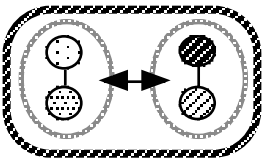
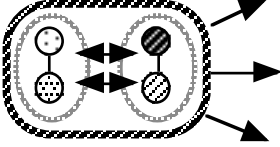


Generic SCIENCE level descriptions	Visual interpretation	Force Level Samples
<p><b>Awareness - Level 1 students</b>            Are <b>aware</b> of matter and energy and living things.            Can <b>observe</b> objects and <b>observe</b> changes.            Can <b>distinguish</b> between objects.            Can <b>distinguish</b> between changes.</p>		<p><b>Level 1</b>            Students are aware of forces as pushes or pulls. They are aware of different sources of forces (rubber bands, magnets, etc.)  <i>Lower Primary school students achieve this.</i></p>
<p><b>Describing - Level 2 students</b>            Can <b>describe</b> and name objects.            Can <b>describe</b> and name features of objects.            Can <b>describe</b> changes to objects.            Can <b>describe</b> how.            Can prepare <b>lists</b>.</p>		<p><b>Level 2</b>            Students can describe forces and how they affect objects. They can describe forces as changing the shape of material or changing the movement of objects.</p>
<p><b>Patterns - Level 3 students</b>            Can <b>describe patterns</b> in objects and in features of objects.            Can <b>classify</b> and sort objects and features.            Can <b>organise</b> observations and information.            Can <b>link</b> cause and effect.</p>		<p><b>Level 3</b>            Students can recognize patterns forces. They can identify a magnetic force from a mechanical force. They can distinguish gravity from magnetic forces.</p>
<p><b>Comparing - Level 4 students</b>            Can <b>compare</b> characteristics and features.            Can identify <b>processes</b> that are occurring.            Can describe <b>relationships</b> and <b>interactions</b> that are occurring.            Can make <b>predictions</b> based on data.</p>		<p><b>Level 4</b>            Students can compare forces by using simple force measurers. They can compare/measure forces using a spring balance and unit newton. They can predict the action of a force.</p>
<p><b>Models - Level 5 students</b>            Can use <b>models</b> to explain concepts.            Can use concepts to <b>explain</b> observations.            Can <b>apply concepts</b> to new areas.            Understands experimental <b>design</b> procedures.            Can <b>assess</b> ideas and information.</p>		<p><b>Level 5</b>            Students can use vectors to represent forces. They can qualitatively use the concept of resultant force and balancing force. They can explain the working of force machines. <i>This is the first level of abstract thinking.</i></p>
<p><b>Quantitative - Level 6 students</b>            Can describe models <b>quantitatively</b>.            Can apply <b>quantitative</b> information.            Can apply <b>laws</b>.            Can explain <b>interactions</b> occurring.            Can present relevant <b>evidence</b>.</p>		<p><b>Level 6</b>            Students can describe the effects of forces quantitatively. They can apply Newton's Laws of motion, Principle of Moments. They can determine a resultant force.  <i>This is typical of top year 9 and most year 10 students.</i></p>
<p><b>Theories - Level 7 students</b>            Can <b>apply theories</b> and <b>principles</b> to explain observations.            Can <b>describe</b> and <b>analyse</b> systems.            Can <b>evaluate</b> theories, systems and ideas.            Can <b>predict</b> based on system wide evidence.</p>		<p><b>Level 7</b>            Students can apply higher order force laws (Triangle Law) to calculate resultant force. Impulse of a force. <i>These are higher level concepts that only the more advanced students can cope with – usually upper school Physics students.</i></p>
<p><b>Complex Systems - Level 8 students</b>            Can <b>explain</b> complex systems and complex interactions.            Can <b>apply</b> concepts, models, laws, theories and principles to <b>complex systems</b>.            Can <b>use models</b> to compare, validate or refute ideas.            Can use knowledge, principles, theories and supporting data to <b>evaluate</b> and make <b>recommendations</b>.</p>		<p><b>Level 8</b>            Students can solve force problems in complex systems relating to three or more forces in equilibrium; problems involving combinations of moments and forces at an angle. They can relate this to real life situations.</p>