

Question number	Answer	Notes	Marks
5 a	<p>any FIVE from:</p> <p>MP1. Object has weight or there is a downward force (due to gravity on the object);</p> <p>MP2. So it accelerates (downwards);</p> <p>MP3. there is (a force of) drag (upwards or to oppose movement);</p> <p>MP4. drag increases as speed increases;</p> <p>MP5. eventually drag = weight ;</p> <p>MP6. (hence) resultant force is zero;</p> <p>MP7. (hence) object travels at constant speed;</p>	<p>allow:</p> <p>gravity pulls it down</p> <p>the speed/velocity increases</p> <p>oil resistance / water resistance / air resistance for drag</p> <p>oil friction / water friction / air friction for drag</p> <p>'drag increases as it accelerates'</p> <p>forces are equal / forces are balanced</p> <p>accept 'no acceleration'</p> <p>DO NOT ALLOW</p> <ul style="list-style-type: none"> • (The drag) slows it down MP2 • upthrust for drag MP3 • resistance = acceleration for MP5 • terminal velocity for constant speed for MP7 	5

b	<p><u>Measuring instruments</u> MP1. Timer / stop-clock/ light gate (and data logger); MP2. Ruler / scale;</p> <p><u>Measurements made</u> MP3. Take time for ball to pass between two points; MP4. determine the distance apart; MP5. Repeat readings lower down; OR MP6. For a set time (e.g. for 1 s); MP7. measure distance travelled (in this time); MP8. Repeat readings lower down; OR MP9. measure velocity using light gate with data logger; MP10. at two different places;</p> <p><u>Using measurements</u> MP11. Use speed = distance / time; MP12. How results indicate terminal velocity achieved;</p>	<p>Ignore ticker-timer measurement of mass</p> <p>condone tape measure</p> <p>if the measurements are from top to bottom then only give MP3 or MP4 not both</p> <p>allow velocity for speed</p>	5
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(Total for Question 5 = 10 marks)