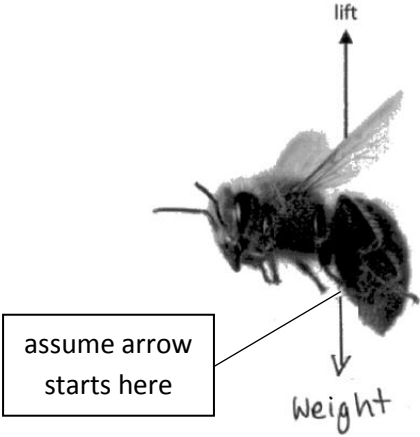


Question number	Answer	Notes	Marks
2 a	<p>downward arrow labelled 'weight' / 'air resistance';</p> <p>downward arrow is shorter than lift arrow (by eye);</p> 	<p>ignore horizontal arrows</p> <p>allow gravitational force, force due to gravity, W, mg, AR ignore spelling ignore 'gravity' 'G' judge length of arrow starting from the bottom of the bee ignore horizontal position of arrow</p>	2
b	<p>(i) B;</p> <p>(ii) A;</p> <p>(iii) (average) speed = $\frac{\text{distance (moved)}}{\text{time (taken)}}$;</p> <p>(iv) substitution; evaluation; e.g. (speed =) 19.5/35 (speed =) 0.56 (m/s)</p>	<p>allow rearrangements and standard symbols e.g. $v=s/t$ $s=d/t$</p> <p>allow distances used in range 19.5-20.0 (m) allow answers in range 0.55 - 0.57 (m/s) answer of 0.54 (using speed=19) gains 1 mark only</p> <p>0.5571429 allow 0.6 if supported by working</p>	<p>1</p> <p>1</p> <p>1</p> <p>2</p>

c	(i)	any one of: fluorescence; production of vitamin D; calcifying fillings/eq; killing bacteria; treating skin conditions/(skin) cancer;	ignore unqualified ultraviolet lamps, security markers etc. allow tanning bed, fluorescent tubes, detecting security markings/false bank notes allow setting fillings	1
	(ii)	any one similarity from: MP1. both EM waves / part of EM spectrum; MP2. both travel at the same speed / speed of light (in free space); MP3. both transverse waves; MP4. both can travel through a vacuum; any one difference from: MP5. visible light has lower frequency / ORA; MP6. visible light has higher wavelength / ORA;	allow 3×10^8 m/s ignore references to energy and penetrating power, ultraviolet can't be seen by humans	2

Total for question 2 = 10 marks