

GCSE Science/ Physics
Internally Assessed Activity Unit P1b
Topic - 12 Space and its Mysteries

Water rockets

1	a		Thrust; Weight;	1 1	
	b		Weight;	1	
					Total 3 marks

2	a		To allow for the rocket to come down safely without harming people/buildings	1	
	b		One from: Wear safety goggles; Stand well back at launch; Warn people in the vicinity; Keep small children away; Any other suitable safety precaution;	1	
	c	i	To take an average; To increase accuracy/spot anomalies;	2	
		ii	Label "average"; Value 1.2 (accept 1.18);	1 1	
	d	i	Mass (do not accept weight); m or metres (ignore spelling mistakes, do not accept cm); Point accurately plotted as (400, 6); Smooth curve (do not accept point to point straight lines);	4	
		ii	Values from student's graph 120 g +/- 10 g; Values from student's graph 380 g +/- 10 g;	2	
					Total 12 marks

3	a		Ring around point at (400, 1.6) (allow reference to 400 on the 1.8 bar line);	1	
	b		Increased pressure leads to increased height; For equal values of mass/2 bar line is always higher than 1.8 bar line;	2	
					Total 3 marks

4	a		Thrust > weight + air friction/up force > down forces; Unbalanced forces produce acceleration;	2	
	b		Reducing drag reduces air friction/down forces; More acceleration produced/rocket will go higher;	1 1	
	c		Pressure of air (in bottle) decreases/water is forced out more slowly;	1	
	d		Thrust goes to zero/all water is gone;	1	
					Total 6 marks

5			Simon (no mark) No need for anything to push against; Plus, two from: Space craft have a store of fuel; Fuel ejected from rocket backwards; Fuel causes rocket to move forwards; High speed of fuel/slower speed of space craft; Idea of action and reaction;	1 2	
					Total 3 marks

					Overall total 27 marks
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