

Question	Answer	Marks	AO Element	Notes	Guidance
1	C - 66 seconds	1			
2	B	1			
3	any three from: - making marks / lines on track for start and finish - repeats / find average time - constant starting positions - not pushing car - time from same point on car - use light gates / data logger / automatic timer for timing - method for avoiding parallax error <u>when judging finishing point</u> / stand level with finish	3			
4	description or diagram to show one from: - perpendicular line of sight - reading to bottom of meniscus	1			
5	stopwatch / stopclock	1			
6(a)	use of at least 3 turns	1			

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	(mark string and) measure distance (between marks) and divide by number of turns	1			
6(b)	any one from: <ul style="list-style-type: none"> • stretching of string • thickness of string • thickness of mark • gaps between turns • winding of turns at an angle 	1			
7	metre rule, tape measure, (surveyor's) laser measurer, trundle wheel	B1			tape is too vague accept rule(r)
8(a)	3 points correctly plotted to ½ square	B2			
8(b)	(vertical) spacing not uniform / equal OR points not on a straight line OR points do not line up OR difference in gradients between points	B1			
9(a)	measuring cylinder / graduated cylinder	B1			

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9(b)	balance	B1			accept spring balance accept (weighing) scales
9(c)	find mass of empty cylinder	B1			
	find mass of cylinder + liquid	B1			
	subtract values	B1			NOT if stated the wrong way round accept valid alternative methods
10	reaction time owtte OR delay in hearing sound	B1			
11	rule alongside spring	B1			
	set zero at one end and read scale at other end OR take scale reading at each end and subtract	B1			
	extra valid detail, e.g. rule close to and parallel with spring, use of marker/setsquare, eye level with reading etc.	B1			

Question	Answer	Marks	AO Element	Notes	Guidance
12(a)	time of burning: 2 hours 15 minutes	B1			
	2.25 hours	B1			accept 2 1/4 hours
12(b)	(speed =) distance+time in any form: symbols, words, numbers	C1			ecf from (a)
	0.8(0) cm / hour	A1			ecf from (a)
12(c)	correct deduction from candidate's (b)	B1			
	correct reasoning from candidate's (b) e.g. 24 cm candle would burn for 30 h OR 19.2 cm will burn in 24 h	B1			
					[Total: 29]