

Length & Time

Mark Scheme 2

Level	IGCSE
Subject	Physics
ExamBoard	CIE
Topic	General Physics
Sub-Topic	Length & Time
Paper Type	(Extended) Theory Paper
Booklet	Mark Scheme 2

Time Allowed: 44 minutes

Score: /37

Percentage: /100

- 1 (a) acceleration = $\frac{v-u}{t}$ OR $\frac{\Delta v}{t}$ (symbols used to be explained)
 OR change of velocity \div time
 OR rate of change of velocity
 OR change of velocity per second / in 1 sec (allow 'in a certain time')
 accept speed for velocity B1
- (b) use of any area under graph C1
 750 m A1
- (ii) time = change of speed \div acceleration OR 30/0.60 C1
 = 50 (s) A1
 if working for $t = 50$ s not shown, allow 2 marks for correct use of 50 s
 graph: along y-axis to 180 s / rise starts at 180 s B1
 from x-axis rises to 30 m/s at 230 s / candidate's calculated time B1
 horizontal from top of slope to 280 s B1 [8]
 allow $\frac{1}{2}$ square tolerance at 180 s where relevant
 allow ecf from wrong t
- 2 (a) all points plotted correctly $\pm\frac{1}{2}$ small square B1
 smooth curve through points, by eye B1
- (b) decreasing OR idea of greater at greater heights NOT decelerating B1
- (ii) increasing OR idea of slower at greater heights NOT accelerating B1
- (c) idea of resultant force becomes zero B1
- (d) decreasing/slowing down, ignore deceleration NOT accelerating B1
- (e) $F = ma$ in any form, letters, words, numbers C1
 ($a =$) 3.6 (m/s²) c.a.o. C1
 ($F =$) 216 N / 220 N A1

[Total: 9]

- 3 check zero on stopwatch OR repeat OR other sensible precaution B1
 start stopwatch at some recognisable point in the cycle B1
 stop stopwatch after at least 10 cycles OR count no. of cycles in at least 10 s B
 divide time by number of cycles B1 [4]
- 4 (a) micrometer OR screw gauge OR vernier scale NOT vernier callipers B1
- (b) 2.73 mm B1
- (c) check/set zero)
 close instrument on to paper)
 not too tight/use ratchet) any 3 B1 × 3
 take reading of both scales)
 use several sheets)
 divide reading by no. of sheets)
- 5 (a) mention of distance AB OR distance between highest points of weight C1
 OR distance along arc AB of circle OR angle between extreme positions of string
 idea of half of one of the above A1
- (b) use of protractor / ruler)
 note value of max angle/distance or its double) any 3 B1 × 3
 from vertical or halve)
 avoidance of parallax)

[5]

[5]

6	(a)	time a number of swings (if number stated, >5) time divided by [2 x number of swings]	M1 A1	2
	(b)	weight of gravity and tension	B1	
	(ii)	force towards centre of circular motion or towards support point	B1	2
	(c)	p.e. = mgh or $0.2 \times 10 \times 0.$ = 0.1 J	C1 A1	2 [6]