CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the May/June 2015 series

5054 PHYSICS

5054/42 Paper 4 (Alternative to Practical), maximum raw mark 30

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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CAMBRIDGE
International Examinations

1	**(a)**	**(i)**	line marked from one shoe <u>to same point</u> on other shoe	B1
		(ii)	40 to 90 cm OR 0.4 to 0.9 m max 2 sf unit required	B1
		(iii)	100 / (a)(ii) in m OR 10 000 / (a)(ii) in cm	B1
	(b)	**(i)**	(push along ground and) count 100 / 200 clicks / turns	B1
		(ii)	sensible comment, e.g. length of step / stride may vary / each 'click' exactly 50 / 100 cm / stride length only an estimate	B1

[Total: 5]

2	**(a)**	**(i)**	1.268 seen 1.27 s c.a.o. unit required	C1 A1
		(ii)	<u>large</u> variation in raw data / data to 2 d.p. time to fall varies	B1
		(iii)	allows time for parachute to inflate / larger times / more repeatable / minimises percentage error in the time / minimises the <u>effect</u> of (human) reaction error	B1
		(iv)	441(.0) cm^2, c.a.o. unit required correct precision	B1
		(v)	largest square from A4 sheet of paper / sheet 21 (cm) wide / if greater area used, it won't be a square	B1
	(b)(i)(ii)		441 and 1.27 in table <u>with no unit</u> ecf (a)(i) 400, 324, 256, 196, 144 c.a.o. ecf	B1 B1
		(iii)	axes: correct way round, labelled quantity and unit scales: more than ½ grid, linear, not awkward no scales of 3, 7 etc. points plotted accurately within ½ small square best fit straight line drawn	B1 B1 B1 B1
		(iv)	time needed to fall with no parachute	B1

[Total: 13]

3 **(a)** correct circuit symbols
all components in a series circuit — B1

(b) A and B labelled at ends of fixed resistor — B1

(c) *y*-shift c.a.o. no additions — B1

(d) **(i)** 3.2 V ± 0.2 unit required — B1

(ii) dot moves up — B1

[Total: 5]

4 **(a)** thermometer
stopwatch / (stop-)clock / timer / watch — B1

(b) diagram of test tube
containing water
thermometer with bulb in water — B1

eye drawn level with <u>top of thread</u> in thermometer — B1

(c) temperature / temp / T / θ AND time / t (or vice versa) — B1

°C / deg C / degree C AND second(s) / s / minutes / min — B1

(d) any two sensible points, e.g.
timer close to test tube / see both together
test tube in clamp stand
thermometer in clamp stand
thermometer with scale facing you
two people with explanation (e.g. count down)
clamp not obscuring the reading
thermometer not touching the sides / bottom of test tube /
⅓ or ½ of thermometer immersed
parallax avoided <u>qualified</u> — B2

[Total: 7]