



**Cambridge International Examinations**  
Cambridge Ordinary Level

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**PHYSICS**

**5054/42**

Paper 4 Alternative to Practical

**May/June 2016**

MARK SCHEME

Maximum Mark: 30

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**Published**

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge O Level – May/June 2016	5054	42

- 1 (a) (i) (clamp) may topple / fall / tilt / bend / turn / become less stable / become unbalanced / move clockwise (to the right) B1
- (ii) sketch showing rod turned around the other way B1
- (b) (i) rule vertical (by eye) with **two** set squares correctly used B1
- (ii) height (above bench) at two places same B1
- (c) (i) use of vertical ruler / set square / plumb line B1
- (ii) 53 cao B1
- (d) (i) axes labelled quantity on both axes and unit on y-axis only and axes correct way round B1
- scales linear, not awkward, start from (0,0) B1
- points plotted accurately B1
- smooth best fit curve drawn B1
- (ii)  $l \times N_{av}$  seen for one pair of values from graph **or table** B1
- two correct values of  $xy$  calculated and not equal comment B1
- (iii) less card used B1
- can use just one piece of card o.r.a
- 2 (a) (i) P marked at centre of AB B1
- (ii) correct normal at P B1
- (iii) ray accurately drawn at  $40^\circ$  to normal B1
- (b) use of ray box / pins / crosses / pencil dots to mark incident ray B1
- mark emergent ray with pins / crosses / pencil dots B1
- emergent ray drawn through crosses / dots **to prism** B1
- ray drawn through prism to join incident and emergent rays B1

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge O Level – May/June 2016	5054	42

- 3 (a) (i) 540 N c.a.o unit required B1
- (ii) moving changes the reading so reading is steady / does not change / needle is stable B1
- (iii) avoids parallax error (or described) B1
- (b) (i) to get largest reading  
reading just before it changes / starts to move  
little time to take reading B1
- (ii) to reach the box (so he can push it) B1
- 4 (a) apparatus just fits across diameter, **and** B1
- (b) wind thread around cylinder B1
- wind  $n$  times where  $3 \leq n \leq 10$  B1
- measure length / of string B1
- diameter =  $l / n\pi$  B1