

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge Ordinary Level

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## **MARK SCHEME for the May/June 2015 series**

### **5054 PHYSICS**

**5054/42**

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

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|        |                                   |          |       |
|--------|-----------------------------------|----------|-------|
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- 1 (a) (i) line marked from one shoe to same point on other shoe
- (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 10000/(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 C1  
1.27 s c.a.o. unit required A1
- (ii) large 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 effect of (human) reaction error B1
- (iv) 441(.0)cm<sup>2</sup>, 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 with no unit ecf (a)(i) B1  
400, 324, 256, 196, 144 c.a.o. ecf B1
- (iii) axes: correct way round, labelled quantity and unit B1  
scales: more than 1/2 grid, linear, not awkward B1  
no scales of 3, 7 etc.  
points plotted accurately within 1/2 small square B1  
best fit straight line drawn B1
- (iv) time needed to fall with no parachute B1

[Total: 13]

|        |                                   |                |
|--------|-----------------------------------|----------------|
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- 3 (a) correct circuit symbols  
all components in a series circuit
- (b) A and B labelled at ends of fixed resistor B1
- (c) y-shift c.a.o. no additions B1
- (d) (i)  $3.2V \pm 0.2$  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  
  
eye drawn level with top of thread in thermometer B1
- (c) temperature / temp / T /  $\theta$  AND time / t (or vice versa) B1
- $^{\circ}C$  / 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) B2  
clamp not obscuring the reading  
thermometer not touching the sides / bottom of test tube /  
 $\frac{1}{3}$  or  $\frac{1}{2}$  of thermometer immersed  
parallax avoided qualified
- [Total: 7]