



---

**PHYSICS**

**0625/63**

Paper 6 Alternative to Practical

**October/November 2016**

MARK SCHEME

Maximum Mark: 40

---

**Published**

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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2016 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level components and some Cambridge O Level components.

Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2016	0625	63

Question	Answer	Mark
1(a)(i)	$\theta = 82(.0), 80(.0)$	1
1(a)(ii)	units all correct (symbols or words) $t$ values all present (30, 60, 90, 120, 150 and 180)	1 1
1(b)	any 2 appropriate precautions:  e.g. viewing perp. to thermometer scale (to avoid parallax) stir before reading keep thermometer at same level / not touching beaker walls wait until reading stops rising at the start	2
1(c)(i)	Conclusion <u>and</u> explicit quoting of figures from the table which relate to the <i>whole</i> 180 s period (eg 15.0 and 9.5 °C, or 5.5 °C more)  statement that B cools more <u>quickly</u> / its <u>temperature</u> drops <u>faster</u> / its temperature falls more <u>in the same time</u>	1  1
1(c)(ii)	any suitable improvement to apparatus relating to comparison: e.g. insulate sides, use plastic beaker, stand on mat  matching explanation: e.g. thermal energy only escapes from surface, surface area only variable changed, less transfer of thermal energy / heat by sides  appropriate effect on values of $\theta$ : e.g. all higher	1        1        1

<b>Page 3</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>63</b>

<b>Question</b>	<b>Answer</b>	<b>Mark</b>
1(d)	any appropriate factor: e.g. volume of water, initial temperature of water, similar ratio of surface areas, type / material / size of beaker, room temperature	<b>1</b>
	<b>Total</b>	<b>11</b>

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – October/November 2016	0625	63

Question	Answer	Mark
2(a)(i)	$h_0 = 1.5$ (cm) $h_1 = 4.0$ (cm)	1 1
2(a)(ii)	$M = 2.7$ (or ecf) <u>and</u> no unit for $M$	1
2(a)(iii)	Answer given to 2/3 sig figs <u>and</u> with appropriate unit Value given for $f_1$ rounds to 14.5 or 14.6 (cm)	1 1
2(a)(iv)	any appropriate difficulty: e.g. hand/ruler in way of image  matching improvement: e.g. use translucent screen and view from behind use transparent ruler, fix ruler/grid to screen	1  1
2(b)(i)	distance present, and $v = 25.0$ (cm)	1
2(b)(ii)	$f_2$ present (expect 15.4 (cm)) <u>and</u> statement matching results  justification matching correct statement ('within limits of experimental accuracy' / owtte)	1  1
2(c)	any suitable precaution:  e.g. dark room/bright light (centre of) lens and object same height (above bench), lens/object/screen perpendicular (any one will suffice), ruler fixed/placed on bench, mark centre of lens on holder repeat with different values of $u$ / different sizes of object	1
	<b>Total</b>	<b>11</b>

<b>Page 5</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>63</b>

<b>Question</b>	<b>Answer</b>	<b>Mark</b>
3(a)	Four correct $I$ values (0.12, 0.15, 0.17, 0.19 and 0.21) present The fifth one is also correct	<b>1</b> <b>1</b>
3(b)	correct calculations of $R$ (4.2, 6.7, 8.8, 10.5, 11.9) or ecf from (a)	<b>1</b>
3(c)	graph:  axes correct way round, labelled with quantity and unit  appropriate scales (plots occupying at least $\frac{1}{2}$ grid)  plots all correct to $\frac{1}{2}$ small square  well-judged line <u>and</u> thin line, precise plots	<b>1</b>  <b>1</b>  <b>1</b>  <b>1</b>
3(d)	simple statement matching candidate's line (e.g. resistance increases with p.d.)  qualified (e.g. changes less rapidly for greater p.d. values)	<b>1</b>  <b>1</b>
3(e)	correct symbol for variable resistor (rectangle with strike-through arrow only)  in correct series circuit	<b>1</b>  <b>1</b>
	<b>Total</b>	<b>11</b>

<b>Page 6</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – October/November 2016</b>	<b>0625</b>	<b>63</b>

<b>Question</b>	<b>Answer</b>	<b>Mark</b>
4	<p>apparatus – workable arrangement</p> <p>how applied force is measured</p> <p>suitable table for results / plot a bar graph</p> <p>how to conclude which is strongest</p> <p>one suitable control variable:                      e.g. same width of sample                      same thickness / weight / length of paper                      all samples fixed in same way</p> <p>any 2 from:                      2nd control variable,                      force applied smoothly / no jerking                      ensure no tears before applying force                      repeat for each type of sample / repeat with samples of different widths                      soft mat under weights (to cushion fall) / clamp stand to bench                      add weight of lower block to value of load                      any other suitable precaution</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>2</p>
	<b>Total</b>	<b>7</b>